The American Journal of Pharmaceutical .... Education ....

The Program Number

The Fifty-First Annual Meeting

Atlantic City, New Jersey

April 29 to May 2, 1950

THE OFFICIAL PUBLICATION OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

"It takes a man of exceptional character to overcome in later life the handicaps of an inferior education."—Kenneth Robert Redden, College of Law, The University of Virginia, in the Journal of Legal Education.

Volume XIV April, 1950 Number 2

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THE AMERICAN JOURNAL
OF
PHARMACEUTICAL EDUCATION

Volume XIV **April, 1950** **Number 2**

CONTENTS

The Physical Sciences and Mathematics—*George H. Webster* 269-275

Is Pharmacy No Longer to be a Major Course in the Pharmaceutical Curriculum—*Kenneth L. Waters* 275-278

Experiments in the Use of the Problem Type of Examination for Students in Pharmacy Administration—*Paul C. Olsen* 278-285

Charles Rice (1841-1901) As Immigrant in Pharmacy—*H. George Wolfe* 285-305

Benjamin E. Holsendorf (1874-1944)—*George F. Archambault* 305-309

An Experiment with Pharmaceutical Administration at Howard University—*Chauncey I. Cooper* 309-312

The Problem of Pharmaceutical Administration—*Charles W. Bliven* 312-318

Can Pharmacy Be Taught Adequately in Two Years—*Francis J. O'Brien* 318-321

A Visual Aid in the Teaching of Dispensing—*A. E. Slesser* and *Earl P. Slone* 321-326

The President's Page 327-328

The Editor's Page 329-335

Notes and News 336-344

Miscellaneous Items of Interest 345-364

Published quarterly by the American Association of Colleges of Pharmacy at Lincoln 8, Nebraska. (Jacob North & Co.) Subscriptin price $4.00. Single copies $1.00. Entered as second class matter July 1, 1937, at the postoffice at Lincoln 8, Nebraska, under the Act of August 24, 1912.

Editorial Office: College of Pharmacy, University of Nebraska, Lincoln, Nebraska. Address all communications to the Editor.

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The Physical Sciences and Mathematics*

GEORGE L. WEBSTER
University of Illinois

No one will object to the assumption that the physical sciences and mathematics are fundamental to the technology and skills practiced in dispensing pharmacy, manufacturing pharmacy and pharmaceutical research. There is an indisputable value to them in understanding biological processes and reactions and finally, a knowledge of the physical sciences and the scientific method has an important contribution to make to the daily life of the individual in modern society.

It is not necessary to further establish a case for the inclusion of the physical sciences and mathematics in the pharmaceutical curriculum but only necessary to consider what parts of the whole field are most pertinent. Closely correlated with this problem of scope is the equally important decision of the quantity and quality of instruction to be offered.

The scope of the physical sciences which underlie the study of pharmacy comprise the subject matter usually designated by the titles, general chemistry, qualitative analysis, quantitative analysis, organic chemistry, general physics and college mathematics as the basic courses. Because of their fundamental nature in the study of the materials and processes of pharmacy they should be included in the early years of pre-professional and professional study. As the curriculum develops toward the ultimate year these basic courses furnish the background for the more specialized subject matter of physical chemistry, biological chemistry, drug assaying and the chemistry and pharmacy of medicinals.

The early courses in the sciences are and should be devoted to establishing in the mind of the student the fundamental char-

*Presented at the panel discussion of the pharmaceutical curriculum at the 1949 meeting at Jacksonville.

acter and the universality of the principles of natural phenomena. These are met and studied in the beginning course in chemistry and further exemplified in the introductory course in physics. The introductory courses in these subjects in the college curriculum must be soundly conceived, accurately presented and thoroughly learned.

In addition to (1) the factual knowledge acquired in general chemistry, the students should gain (2) some ability to observe and interpret experimental data; (3) appreciation of the scientific method; (4) ability to use and understand the language of science, particularly chemical terminology and notation; (5) basic skills in manipulation which are employed in subsequent courses in chemistry and pharmacy.

As some college courses are administered, the general principles of chemistry are merged during the second semester of the first year with the introductory course in inorganic qualitative analysis. In other institutions, qualitative analysis follows a year of general chemistry. Either plan in the hands of expert teachers will adequately prepare the student for his subsequent development. The combined course requires a more intensive treatment of subject matter and a reduction in the amount of descriptive material which can be included.

Among the values to be derived from a course in qualitative analysis may be listed: (1) an increased familiarity with the principles of chemical equilibrium as they apply to the processes of solution, precipitation, hydrolysis, and buffering; (2) an increased familiarity with the practical value of the balanced chemical equation as an expression of quantitative relationships among ions; (3) a knowledge of a systematic procedure for the qualitative analysis of a substance; (4) a knowledge of the reactions by which inorganic ions are identified; (5) the ability to express and use the several forms of the equilibrium constant in mathematical form, e.g., K_w, K_{sp}, K_a, K_b; (6) an introduction to the meaning of such terms as pH, pKa, pKb.

These values if acquired with sufficient thoroughness, have direct application to the subsequent courses in chemistry, physiology, pharmacology, biochemistry and pharmacy and lead to the ability to read and understand the descriptive monographs of the official compendia.

The introductory course in mathematics may be the conventional sequence of college algebra and trigonometry but it would be preferrable to have available a functional course in introductory college mathematics which should be designed to include not only the principle of these disciplines but also some of those which are frequently reserved for courses in analytic geometry. Such introductory courses are now available in many college and university offerings and would be particularly valuable in achieving the objectives of: (1) Ability to express observed phenomena in mathematical terms; (2) ability to analyze the problem posed by the data taken during experiments; (3) facility in mathematical manipulations; (4) ability to use logarithms in the calculations of science; (5) a knowledge of and facility in the use of the trigonometric functions; (6) a knowledge of the graphical representation of algebraic equations and (7) ability to interpret the graphical representation of experimental observations.

These objectives have direct application to the subsequent courses in physics, chemistry, physiology, pharmacology and pharmacy. It has been said that one has never really mastered a scientific principle unless one's understanding can be expressed in terms of mathematics. Mathematics in a scientific curriculum is as a sharp, shining tool in the hands of a skilled artisan which enables him to etch the revealing detail on an otherwise vaguely perceptible outline form.

Quantitative analysis logically follows the study of general chemistry and qualitative analysis. All three are concerned with establishing the fundamental laws of chemistry on an experimental basis. Quantitative analysis should provide the student with (1) a knowledge of the principles of the standard methods of analysis, their advantages, limitations and applicability; (2) acquaintance

with the language of analytical chemistry so that he may be able to interpret and follow the official assay procedure; (3) increased familiarity with such topics as pH, indicators, precipitation, adsorption and chemical calculations; (4) an introduction to and an appreciation of precision techniques, experimental accuracy and dependability, and the limitations of accuracy imposed by the apparatus as well as the methods.

The principles and concepts of physics are so fundamental to the properties and behavior of matter that they are utilized in other studies without always giving due credit to scientists in this field who have studied and codified them into exact laws. It is only necessary to recall that the typically pharmaceutical operations of measuring mass, volume, temperature, specific gravity, refractive index and optical rotation and the important applications of the principles gas and fluid pressure, the dynamics of fluid flow, the mechanics of motion, the lever, electrical resistance and conductance, sound generation and conductance, light generation and distribution to pharmacy, physiology and our daily lives to establish the position of a substantial study of physics in the curriculum.

The courses described up to this point are fundamental courses common to most pre-professional studies and to the science majors in liberal arts. Because of this they are physical science courses most frequently offered and soundly administered in the junior or community colleges. In my opinion they are the ones which should be prescribed in the pre-professional years of the six year program. A caution should be inserted here that, for this purpose, the college of pharmacy administration should insist that these courses be the complete introductory course for science majors and refuse to accept the survey type of course commonly taught as an introduction to science for students of the humanities and arts.

A full, basic science course in organic chemistry is not as commonly available in the community type college as are the courses previously considered. It is important that the student

of pharmacy have a more extensive preparation in this subject than some of the other professions because he is constantly required to make applications of the knowledge and principles of organic chemistry in his subsequent courses in the biological sciences and professional pharmacy courses as well as in the practice of his profession after graduation. For this reason, the course in organic chemistry may properly be scheduled in the first year of the professional curriculum.

The student should gain from this introductory course, acquaintance with (1) the accepted principles of nomenclature, (2) the purpose and meaning of structural formula writing, (3) the general and characteristic class reactions, (4) the properties of compounds and the relationships of these to the stability and compatibility of organic chemical drugs, (5) methods of synthesis, (6) fundamental theories of organic chemistry and (7) the skills and technics of organic chemistry, many of which are used without modification in pharmaceutical practice.

It is to be expected that most of the time and effort in the basic courses of the pre-professional years will be devoted to establishing principles and laws of chemistry. A minimum amount will be available for the study of specific chemicals.

A course which may be called, inorganic pharmaceutical chemistry is a natural requirement for a professional curriculum in pharmacy. Such a course should provide the student with familiarity with the origin, physical characteristics, tests for identity and purity, stability, precautions for safe handling and uses of inorganic chemicals used in pharmacy as medicinal agents, reagents, herbicides, fungicides, insecticides, veterinary drugs, and cosmetics.

The course should follow the inorganic chemistries and physics and furnishes the opportunity for the student to begin his identification with professional technology. It may equally well be titled as a course in pharmacy.

The phenomena associated with the life processes in plants and animals result from chemical processes and may be understood and controlled by a knowledge and application of the principles of physics and chemistry. That division of physical science in which these two sciences merge most obviously is called physical chemistry. The pharmacist must be able to understand and interpret the normal functioning of the living body and to select and prepare medicinal agents in such dosage forms as will be most readily absorbed by living tissue. A substantial course in physical chemistry is indicated in the pharmaceutical curriculum (1) to enable the pharmacist to perform the function of a fabricator of efficient medication, (2) as a preparation for the study of biological chemistry, physiology and pharmacology, (3) as a foundational study for elective sequences in the graduate school.

A prerequisite for any substantial course in physical chemistry is an introductory course in the Calculus. As in many other areas, a kind of course can be administered without suitable mathematical background but if the full objectives of the course in physical chemistry are to be realized, the ability to translate the observations into their proper numerical relationships and to interpret the literature of the science is a necessity. These objectives can not be achieved without a suitable mathematical training.

The principles of quantitative analysis as learned in the beginning course are a necessary prerequisite to scientific pharmacy. The application of these principles to the specific problems of determining the quantitative composition of pharmaceutical preparations and natural products should be a part of the training of the professional pharmacist. The course in drug assaying should be constructed to enable the student to (1) become familiar with the type assay procedures of the official compendia, (2) acquire an appreciation of the precision to be expected in the large scale manufacture of dosage forms, (3) become acquainted with the use of modern analytical instruments, (4) become acquainted with the quantitative standards for natural and synthetic drugs.

Biological chemistry provides a basis for understanding the physiology of animals and plants, pharmacology and the chemical aspects of normal and pathological processes. A substantial course in biological chemistry should provide the student with (1) a knowledge of the origin, composition, properties and biological significance of carbohydrates and carbohydrate derivatives, proteins and their derivatives, fats and lipids, enzymes, hormones, vitamins and minerals as found in animal and vegetable tissues, (2) a knowledge of the absorption and metabolic fate of food substances, minerals and drugs, (3) a knowledge of the procedures and techniques of qualitative and quantitative clinical chemistry, (4) ability to interpret the pharmacodynamic action of drugs in terms of chemical principles, (5) ability to interpret physiological functions in terms of chemical principles.

The chemistry and pharmacy of medicinals is one of the top level courses in the curriculum. Its content should be selected so that the student should derive: (1) An understanding of the constitution, properties, pharmacological action, and pharmaceutical uses of medicinals; the effect upon these of modifications of the structure of the compound, (2) ability to read and interpret the nomenclature of new medicinal agents and to evaluate the therapeutic claims of competing products bearing unrevealing trade names, (3) ability to recognize potential incompatibilities when two or more medicinals agents (official drugs, proprietaries or specialties) are combined and ability to suggest ways of avoiding such incompatibilities, (4) an appreciation of the possibilities of new and as yet unforseen developments in the field of medicinals.

Is Pharmacy No Longer to be a Major in the Pharmaceutical Curriculum*

KENNETH L. WATERS
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A recent report of the Committee on Curriculum has provoked some discussion on this subject. In the proposed six-year program

*Read before the Conference of Teachers of Pharmacy at the 1949 meeting at Jacksonville.

or as some prefer to call it, two-year pre-pharmacy and four-year pharmacy curriculum, there appears to be a total of 192 semester hours required. Of these, 26 or roughly 13 per cent are designated as pharmacy subjects. An additional 11 semester hours are designated as pharmacy orientation, management and law, bringing it to a total of 37 hours which may be designated as pharmacy. This accounts for about 20 per cent of the curriculum.

Some of our number have viewed with alarm this scarcity of pharmacy subjects. It might be well, at the present time, if we defined pharmacy. I have read definitions and I have taught these definitions to classes, yet I do not believe that we can define the study of pharmacy any more so than we can define the study of medicine. For example, if we consider the medical curriculum, we may ask, is the course in physiology and anatomy the study of medicine? If so, on the University of Georgia campus we have a number of people studying medicine who are in the college of arts & sciences. However, I think you will find that if physiology or anatomy is taught in the medical school with a medical viewpoint and toward the end that it will be used in medicine, it will constitute a course in medicine. If taught in the department of biological science as a liberal arts course it may well be considered as a basic course leading to a more cultural liberal arts education.

The same analogy exists in our school of pharmacy. If we define pharmacy as prescription compounding we limit ourselves and make the consideration of a major subject in our pharmaceutical curriculum easier to define. However, if we broaden our scope and define pharmacy as including pharmaceutical service to the community we have a more difficult time in drawing the boundary line between major and minor subjects.

The Pharmaceutical Survey acknowledges the fact that if a course in inorganic pharmaceutical chemistry is taught in the school of pharmacy that it will be in fact a pharmacy course. Here we come again to the fact that it is a matter of the point of view of teaching and the objectives of the teacher which determines whether or not the course can be considered pharmacy.

I believe that if we examine the six-year proposal more closely there is more pharmacy than there seems to be on the surface. We might point out at this time that a course in accounting may well be pharmaceutical accounting and as such must be considered truly pharmacy. The whole idea leads to a definition: If pharmacy is simply prescription compounding our proposed six-year program is woefully lacking in pharmacy and pharmacy is not a major subject. But if we define pharmacy as professional pharmaceutical service to a community and we evaluate each of the courses suggested in the proposed curriculum we will find a great number of courses which we can designate as pharmacy. It has always seemed to me to be impossible to separate certain courses. For example, it is difficult to draw a sharp line of demarkation between three of our senior courses—dispensing, pharmacology and pharmaceutical chemistry.

In actuality pharmacy is an applied science. We like to claim that the apothecary of old was a scientific leader in everything that had to do with medicine, research or public health. Is this true today? If we want to be really critical of our educational program we should probably have a committee composed of a chemist, a biologist, a business man and a doctor of medicine to make a study of our curriculum. We would probably find that these gentlemen in a reclassification of our new six-year pharmaceutical curriculum would leave us with considerably less than the 36 hours which we are now calling pharmacy subjects. A large portion of our general pharmacy would probably be classified as chemistry. Pharmacognosy and pharmacology would definitely be classified as biological sciences. Some courses would naturally go to schools of business administration. Dispening would remain about our only standby. We do not have to go to people outside of our field to obtain diversified opinion as to what to call the various courses. As a matter of fact in this room we have those who think that pharmacy is occupying a minor role in the six-year curriculum. They are alarmed over the fact that certain courses are not bearing the title of pharmacy. There may be some justification for such alarm particularly since many of us are located in universities where we are subjected to studies of our

Before we can answer the question of minor and major subjects we must define pharmacy. Before we define pharmacy we should ask ourselves the question—What should a pharmacist know or even perhaps, What is a pharmacist? Based on our records 73 per cent of the University of Georgia graduates practitce retail pharmacy, some 13 per cent go into medicine and about 10 per cent into related professional fields. What do these men need? Do they need all the subjects outlined? Do they need bacteriology, calculus, pharmacology and pharmacognosy? Which should be considered minor subjects and which major subjects?

In The Pharmaceutical Survey we have spent time and money finding out what subjects should be taught. We should now give more consideration to *for whom* and less consideration to *by whom* the courses are taught. We must have as our goal the development of the best pharmaceutical curriculum possible regardless of whether the courses are designated as majors or minors or whether the title is pharmacy or pharmaceutical chemistry. It is the purpose of pharmaceutical education to train young men and women to practice the profession. We should give those who propose to practice what they willl need to do the job.

Experiments in the Use of the Problem Type of Examination for Students in Pharmacy Administration

PAUL C. OLSEN

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I first became aware of the need for the problem type of examination when I observed the difficulty junior and senior students

*Read before the Conference of Teachers of Pharmaceutical Economics at the 1949 Jacksonville meeting.

curriculum to determine whether there is overlapping in various departments and schools. If we do not call our subjects pharmacy the administrators may get an idea that we have too many faculty members for subjects which are not designated as pharmacy and may think that certain courses could be taught in other departments. Those who are located in schools having only pharmacy probably will not be subjected to such criticism. So until we reach the status of the medical schools it might be well that we at least attach the name pharmacy to some of our courses of pharmaceutical chemistry and other related subjects. This is with justification since the subjects are being taught from the pharmaceutical point of view and we are training pharmacists.

I think that instead of discussing what we shall call courses we should improve our methods of teaching, especially if we are to combat the present trend of counting and pouring from one bottle to the other. Our students must be better informed both factually and professionally so that they can convince the presribers of the merits of the profession of pharmacy. In some manner we must combat the present public trend of thought that practically all prescriptions are simply counted or poured. It is disturbing to note that The Pharmaceutical Survey showed that only 25 per cent of the prescriptions are compounded and a large percent of these contain only two ingregients. Will we be justified in teaching our students incompatibilities and related material if they do not compound prescriptions? We would embark on some type of program to increase the percentage of prescriptions which are compounded. As it is necessary to have association backing and the backing of the medical profession we must make some effort to do this. I personally feel that in the next several years there will be a trend away from the prescribing of proprietaries and that we will have more prescription compounding.

Now to get back to the subject of "Is Pharmacy to Continue to be a Major in our Curriculum?" I will say that this will depend on our teaching staffs. If a course is taught by one who is interested in the ethics and the profession of pharmacy that course should be counted in the major field.

in pharmacy were experiencing in analyzing and interpreting the so-called "free" or "bonus" goods offers that are made to retail drug store proprietors by manufacturers and other suppliers in the drug trade.

For some time I had observed that drug store proprietors seemed to be confused by these offers. This could have been attributed to a long time absence from the mathematical processes of school days. It could also be attributed to difficulty in the every day rush of store operations to concentrate upon the intricate and exact calculations necessary to measure the saving in purchase cost that is represented by a particular "free" or "bonus" goods offer.

In the relative quiet of an academic atmosphere I had not expected the same difficulties. I had assumed that week to week requirements of a student to keep up with a course in pharmaceutical calculations and in the mathematical processes that are a part of most of the other courses in the physical services that are now a part of the pharmaceutical curriculum would make arithmetical processes of the type needed to analyze and interpret a "free" or "bonus" goods offer a simple task. This was not the case.

Responses in classroom discussions revealed that the reasons for the existence of this promotional device were quickly taught and readily understood. Agonized expressions and elaborate note taking showed the need for an equal ability to analyze and interpret these offers. I decided on written tests to lift the exact language of the offer from the supplier's offer.

This eliminated any question about the teacher's statement of the offer. It also enabled me to say that this is the exact manner in which the offer is made to the retailers who are expected to respond to it. It is also helpful I believe to ask questions about an offer which is in effect at the time the examination is given. For example, a test for junior students in the course in Marketing Methods on November 24, 1948 contained the two following questions:

1. **The following offer is made by the makers of Mexsana in DRUG TOPICS, November 8.**
   "1/2 dozen Mexsana 60c size, $3.50
   1 5/6 dozen Mexsana 30c size, $4.58
   1/6 dozen Mexsana 30c size, no charge
   Determine the percentage amount of the saving to the retailer that is represented by merchandise for which no charge is made.

2. **The following offer is made by the makers of St. Joseph Aspirin in DRUG TOPICS, November 8.**
   "Buy weather chart calendar deal for $18. Get 100 weather chart calendars plus 40 bottles of St. Joseph Aspirin 100s—45c size."
   (The regular price to retailers of this size of St. Joseph Aspirin is $3.60 a dozen).
   What is your estimate of the percentage amount of the saving to a retailer who buys this deal?

The interest aroused by this type of question led me to undertake further experiments along the same lines. In an examination given to this same group of students on January 26, 1949, I posed the following problem.

Total sales of drug stores in the United States in 1948 were estimated by DRUG TOPICS to have been $3,712,000,000. Its estimate for 1947 was $3,659,999,000.

The U. S. Department of Commerce has published the following monthly estimates of total drug store sales for the first 11 months in 1948 and of the part of these total drug store sales that were made in chain drug stores in the first 10 months of 1948.

	Total Drug Store Sales	Part of Total Drug Store Sales Made in Chain Drug Stores
January, 1948	$295,000,000	$66,000,000
February	287,000,000	66,000,000
March	305,000,000	69,000,000
April	294,000,000	65,000,000
May	304,000,000	67,000,000
June	301,000,000	67,000,000
July	307,000,000	70,000,009
		70,000,000

August	299,000,000	68,000,000
September	299,000,000	67,000,000
October	307,000,000	71,000,000
November	295,000,000	not yet published
December	not yet published	not yet published

In November 1947 the part of the total drug store sales made in chain drug stores was $68,000,000. In December 1947, $98,000,000. Total drug store sales in November 1947 were $297,000,000 and in December 1947, $409,000,000.

At the end of 1948 there are believed to have been 49,000 individually owned drug stores and 5,000 chain drug stores in the United States.

On the blank paper which is furnished you and on the basis of the figures above and such other facts as you have, make the following estimates and calculations.

a. Per cent chain drug store sales of total drug store sales in 1948.

b. For chain drug stores in dollar amounts:
   i. Average sales per store
   ii. Average cost of goods sold per store
   iii. Average gross margin per store
   iv. Average payroll per store
   v. Average rent per store
   vi. Average amount of all other store expenses per store
   vii. Average amount of central office and warehouse expense per store
   viii. Average net profit per store.

c. For individually owned drug stores in dollar amounts:
   i. Average sales per store
   ii. Average cost of goods sold per store
   iii. Average gross margin per store
   iv. Average amount of proprietor's or manager's salary per store
   v. Average amount of other salaries per store
   vi. Average rent per store
   vii. Average amount of all other expenses per store
   viii. Average net profit per store.

I believe that much additional effort can be devoted profitably to forcing upon pharmacy students a familiarity with the statistical facts about the pharmaceutical profession and the drug trade. This familiarity will result, I am sure, in a greater ability to understand and use these facts. In an examination in June of 1948

for another group of junior students in pharmacy administration I gave the following figures from published sources and asked for the calculations indicated.

Abbott Laboratories, a manufacturer of prescription products.

	1947	%	1946	%	1945	%	Change from preceding yr. 1947 vs. 1946	%	Change from preceding yr. 1946 vs. 1945	%
Sales	$59,621,175	100.0	$54,209,838	100.0	$37,929,321	100.0	$.....	.....	$.....	.....
Cost of Sales	22,888,925	.....	19,932,996	.....	17,450,921	.....	.....	.....	.....	.....
Gross margin	36,732,250	.....	34,276,842	.....	20,478,400	.....	.....	.....	.....	.....
Expenses	18,968,425	.....	14,749,907	.....	10,605,486	.....	.....	.....	.....	.....
Profit on Sales	17,763,825	.....	19,526,935	.....	9,872,914	.....	.....	.....	.....	.....

The concluding part of the question was, "From your knowledge of the drug trade, and as a pharmacy student write 200 or more words about Abbott Laboratories. The responses ranged all the way from complete frustration to shrewd and thoughtful observations on the facts revealed by their tabulations and the calculations specified.

Other students used the entire examination period in such befuddled efforts to do the arithmetic that they had no time for the interpretative comments asked. I emphasize that Abbott Laboratories should not have been an unfamiliar name to these students. If they had not heard of Abbott Laboratories before they took the course they had had ample opportunity to hear in the classroom about this and other manufacturers of prescription products. There had been what seemed to me an adequate review of the history and growth of this type of supplier and of the characteristic margins, costs and profits.

My most recent experiment with the problem type of examination was on April 12, 1949. The following figures of the income and expenses of the Crown Drug Co., a chain drug store company, have been made public. Excerpts from this examination follow:

With an accuracy to the nearest 1/10%, fill in the percentages indicated.

	1948	%	1947	%
Sales	$14,578,226	100.0	$14,852,660	100.0
Cost of Sales	10,167,787		10,367,837	
Gross margin	4,410,439		4,484,823	
Expenses	4,255,509		4,249,561	
Profit	154,930		235,262	

The following figures for average income and expenses of individually owned drug stores appear in the latest edition of the Lilly Digest.

With an accuracy to the nearest 1/10%, fill in the percentages indicated.

	1947	%	1946	%
Sales	$ 76,520	100.0	$ 69,422	100.0
Cost of sales	51,812		46,995	
Gross margin	24,708		22,427	
Expenses	19,346		16,476	
	5,362		5,951	

Figures, not reproduced here, of the income and expense of the Southwestern Drug Corp., wholesale druggists, were also supplied the students.

Set the prices indicated for a prescription product made by Abbott Laboratories.

Cost of sales to Abbott Laboratories per package $0.40
Selling price by Abbott Laboratories to Crown Drug Co. ..... $ .....
Selling price by Abbott Laboratories to individually owned drug stores ..... $ .....
Selling price by Abbott Laboratories to hospitals and other institutions ..... $ .....
Selling price by Southwestern Drug Corp. to individually owned drug stores ..... $ .....
Selling price by Abbott Laboratories to Southwestern Drug Corp. ..... $ .....
Selling price in the original package to users by Crown Drug Co. and individually owned drug stores ..... $ .....
Selling price to users by Crown Drug Co. and individually owned drug stores when dispensed as a numbered prescription but in the original package of Abbott Laboratories ..... $ .....

I wish I could report that the experiment proved to be an unqualified success. That unfortunately was not the case. All too many of the students became bogged down in the arithmetical processes involved.

I think this was in large part the result of inadequate preparation for the examination. Figures just such as are called for in the examination had been the subject of extensive classroom discussion. The fault it seems to me lay in the difference between classroom demonstration and laboratory practice.

I do not believe it is asking too much of the student to be able to take a set of facts on a subject with which he is or should be familiar and to make thoughtful and useful interpretations from these facts. For these reasons I intend to continue this type of examination. I shall continue to use it until I can find some other method which will force on the student the ability to understand the materials presented to him in the classroom that he can make use of them in an effective manner.

My lack of success so far seems to emphasize the fact that, so far as I am concerned at least, this most important matter should have greater attention in teaching. One of the most important skills it seems to me that a pharmacist can have is to apply statistical facts about the drug trade to situations he is likely to meet in the practice of his profession.

Charles Rice (1841-1901), An Immigrant in Pharmacy*

H. GEORGE WOLFE
Merck & Co., Inc.

"In 1865 or thereabout a warship from Japan came into New York harbor. The Bellevue Hospital was advised that a sick man on board this vessel needed attention, this man having been a general roustabout

*Presented before the joint meeting of the Section on Historical Pharmacy, A.Ph.A., and the American Institute of the History of Pharmacy, Jacksonville, Florida, April, 1949.

on the ship. The ship officers had no data whatever concerning the man, as to where he came from or his relationships. He was very ill and remained in the hospital for some length of time. On convalescing, inquiries were made as to his friends but without resulting in any information whatever. He stated that he was absolutely unknown to anyone in America, nor could they obtain any information as to his antecedents.

"During his convalescence he was put to work in the kitchen, accomplishing such work as cleaning kettles and pans and scrubbing around the kitchen, menial service in all directions. During this period he came into contact with the physicians of Bellevue Hospital, who were surprised to find he was acquainted with medicine and medicines as well as with pharmacy, and also that as a linguist he spoke and read many languages. Consequently he was taken from the kitchen and transferred to the library where he became interested in publications, systematizing them as they had never been systematized before and also taking part in pharmaceutical and chemical manipulations of Bellevue Hospital. Within a reasonable time he became indispensable in all these directions and he was given charge of the laboratory as well as being made Librarian of the Hospital." From a statement by John Uri Lloyd.[1]

The man who, in such strange fashion, "came from the unknown" to embark upon a remarkable career of scientific accomplishment—was Charles Rice. In time, he was to become prominent as a pharmacist, chemist, philologist, editor, college trustee, and association officer; he would be hailed as the father of the modern U.S.P. and as one of the world's foremost authorities on two, entirely unrelated, branches of scientific endeavor. Yet, when he died, his friends realized that they still did not know much more about the background and early history of this famous man than the hospital authorities in 1865 had known about their sailor patient.

Charles Rice was "one of the most retiring and modest" of men.[2] He rarely talked about himself or his personal history. Working continuously, on a schedule beyond belief, he seemed to have neither the time nor the inclination for reminiscing. A brief autobiographical sketch which he prepared for *American Druggist*[3] is our only *direct* source of information. Whatever else we know about his earlier years, is second-hand knowledge: his friends'

recollections of a few dates and episodes which Charles Rice had related to them on the rare occasions when he spoke about the past. After his death, these "Personal Recollections and Tributes" were published in the pages of *American Druggist*, and in a memorial volume which includes a biographical article by J. P. Remington.

Early Years.

Charles Rice (Reis) was born on October 4, 1841, in Munich, Germany. His father was of Austrian nationality; two brothers of his father had settled in the United States in the 1830's. His parents were well-to-do and provided their son with a good education. Rice attended public and private schools and seminaries at Passau, Vienna, and Munich, and a Jesuit college at Paris.[4] The young student felt drawn toward linguistic studies, influenced by one of his relatives who was an "accomplished classical scholar and master of several Oriental languages." Rice tells us that among his teachers were Dr. Gaugengigl of Passau and Professor Marcus Mueller and Abbot Hanneberg of Munich.[5] Years later, Rice explained his expert knowledge of Latin by the fact that the Jesuit college which he attended did not permit the use of the vernacular; the professors lectured in Latin and the students were required to ask and answer all questions in this language.[6] When he was a mere boy of twelve, Rice began the study of Sanskrit. This came about because one of the teachers at Passau discovered a kindred spirit in the young student; without regard to Rice's tender years, he literally drilled the boy in the rudiments of this language which, at that time had not yet been systematized and simplified by Western scholars. When the instruction course ended, Rice "knew Sanskrit and could read it, even after years of disuse, with as much ease as most students read French or German at the end of their college courses."[7]

When the well-educated boy from Munich grew into young manhood, there was still not the slightest indication that he would ever be connected either with America or with pharmacy. But fate took a hand and changed the life pattern of Charles Rice overnight. A financial crash impaired the resources of his parents. It was then that one of his American uncles—then engaged in business at

Green Bay, Michigan—suggested that the young man discontinue his philological pursuits and prepare instead for a "professional and technical career" which might be useful if he should come to the United States. Rice followed his uncle's advice and engaged in scientific studies with Professors Winkler, Wittstein, Dr. Stein and others. The death of his parents soon thereafter threw him entirely on his own resources. Rice left Germany and proceeded first to England, then sailed for the United States in 1862.

When 21-year old Charles Rice arrived in the United States he adopted the English spelling of his family name. There is no reference to any further contact he made with his uncle or other relatives in this country. The Civil War was in progress, and Rice secured an appointment as Surgeon's Steward aboard the sloop-of-war *Jamestown*, lying at Philadelphia and bound for a cruise around the world. In the fall of 1865, her mission completed, the *Jamestown* anchored at San Francisco, and Rice was honorably discharged from the service.[8] Returning to New York, he became ill with malaria and was taken to Bellevue Hospital.

Conflicting Evidence

We have now reached that point in the story of Charles Rice described in the quotation from John Uri Lloyd which prefaces this paper. Lloyd knew Rice well, both through personal contact and correspondence. He has left a statement concerning Rice, stipulating that it not be published during his (Lloyd's) lifetime. This statement, "fortified . . . by Dr. Rice's personal interviews with me," contains facts about Rice which are "in direct conflict" with "details presumably of his early life" as published in the several memorial articles and other printed sources. In the main, these discrepancies pertain to Charles Rice's education, to his position aboard the *Jamestown*, and to his early connection with Bellevue Hospital.

1. The only evidence relating to Rice's education is contained in his autobiographical sketch. While Rice does not supply names of individual institutions, he mentions the cities where he pursued his studies and the names of some of his teachers. It is this in-

formation which was reproduced in the memorial articles. When Rice was still alive, John Uri Lloyd and Dr. Frederick Hoffman discussed the strange phenomenon of the man who, in his youth, had come to Bellevue Hospital as an accomplished scholar; who, in later life, had addressed meetings, knew many students and teachers, edited, wrote; whose name and picture were familiar "the world over"

. . . **"Yet, never . . . was there a man anywhere who recognized him or who knew anything of his (early) history, or who could connect him with science either as a student or professor or who had any authoritative knowledge of him."**

After Rice's death, Hoffman "made it his business" to investigate this matter in Germany. He reported back to Lloyd

"that he could find no evidence of a Charles Rice ever being graduated from any institution in Germany."[9]

It is not clear from this report whether Hoffman, in his search, took account of the name change from Reis to Rice; but it must be assumed that he did, for Rice himself had once told Lloyd how he had changed his name because he felt it proper that it should be "in accord with the American spelling of the word."

There is the possibility that Rice's parents were wealthy enough to eschew the regular means of "formal" education and that they employed prominent teachers as private tutors for their son. The fact remains that Lloyd, just as everyone else, was "overwhelmed" by Charles Rice's knowledge of chemistry, pharmacy, medicine, and languages.[16]

2. Lloyd's story of the arrival of Rice at Bellevue Hospital describes the sailor as "a general roustabout on the ship," citing as authorities for his story not only Rice himself but also "Mr. Menninger, a prominent pharmacist of Brooklyn, acquainted with the incident." Rice himself, however, in his autobiographical sketch—written 26 years after the event—states that he was a Surgeon's Steward; this information has since become part of all biographical articles on Rice.

3. Lloyd's statement and the memorial articles are in complete agreement on one fact: that Rice entered Bellevue Hospital as a patient and that his scientific knowledge and abilities were discovered, as it were, by chance. But, strangely enough, this particularly fascinating part of his story was never published during Rice's lifetime. While it seems clearly established that his official connection with Bellevue Hospital did not begin until he had spent some time there as a patient, Rice's autobiographical sketch states with deliberate briefness that, at the end of the *Jamestown* cruise, he "returned to New York where he at once entered the service of the Department of Public Charities and Correction." Another biographical sketch—appearing in the *Pharmaceutical Record* a few weeks before the autobiographical sketch in *American Druggist*—contains the same brief and misleading information.[11] It is obvious that Rice shied away from discussing this matter, and those who knew him, honored his wishes.

Chief Pharmacist

To continue with the story—as it was finally told after his death—patient Rice at Bellevue Hospital thoroughly disliked his enforced idleness. To while away the time during convalescence he asked for employment of some kind. John Frey, apothecary at the hospital and superintendent of the General Drug Department, assigned him to bottle washing and it was then that Rice received the first of many compliments for his work at Bellevue: "the bottles are very clean."

Once Frey had discovered the remarkable abilities of this ex-sailor, he did not let him leave but secured for him an appointment as assistant. As time passed and Frey became aged and an invalid, Rice had "intimation of a willingness by the commissioners to retire Mr. Frey and appoint Rice in his stead."[12] Another report has it that Frey himself wished to retire and have the younger man appointed to succeed him.[13] Be that as it may, Rice positively refused to accept the position during Frey's lifetime. He performed all the duties and shouldered all the responsibilities of the superintendent's position but was so modest about it that no one outside the Drug Department realized the true state of offairs.[14] Rice

was promoted to apothecary of the newly organized Bureau of Medical and Surgical Relief, then to a similar position at Bellevue Hospital. He tells us that he had continued, in the meantime, his chemical studies "under competent instructors,"[15] this information being the only reference to education received in this country. Finally, upon the death of John Frey, Charles Rice did receive the appointment as chemist of the General Drug Department and, later, chemist of the Department of Public Charities and Correction of the City of New York. He held this latter position, together with that of superintendent of the General Drug Department, until the day of his death.

Charles Rice's working day began at 5 o'clock in the morning when, rain or shine, he would go to the dock to test the milk delivered for the city hospitals.[16] He would then return to his office in the General Drug Department which in those days represented the administrative center of the largest drug bureau in the country. The department—housed since 1887 in a new building for which Rice had drawn the plans[17]—furnished medical and surgical supplies to the approximately 20 institutions under the care of the Department of Public Charities and Correction. Most of the pharmaceutical preparations used in these institutions were manufactured in the department; this list included also all chemicals which could be made more economically than purchased, or which the superintendent wished to obtain in "a known and definite strength." Another important part of the department's work was analytical, examination of medical supplies—whether prepared on the premises or purchased—and of various technical and food products bought for the hospitals, including such items as soap and paint.[18]

It is clear that Rice was very proud of the fact that by his "scrutiny the poor of this hospital" received milk "equal to the very best that can be purchased in the city."[19] For Rice grieved over "the cruelty to the poor which he saw daily" and joined forces with the Reform Party which sought to free Bellevue Hospital from control by a political ring.[20]

One would expect that the conscientious fulfillment of the numerous duties connected with his official position taxed Charles Rice's capacity for work to the limit. While he had a number of assistants, he "expended his vitality" on much of the detail, including the filling of requisitions for the various municipal institutions; he even wrote the labels on those containers for which no printed labels were provided.[21] It is difficult to explain how he was able to handle the prodigious amount of work year after year. What is quite beyond comprehension, however, is the fact that he managed to save enough hours each day—or night—to be active in college work, to perform the enormous task of directing the revision of three pharmacopoeias, and to keep up his study of Oriental languages.

College Trustee

Having discovered the exceptional intellectual makeup of the former sailor and hospital patient, John Frey was not content to see his "find" employed merely as his own assistant. He felt that the young, well-educated immigrant was equipped to make a distinctive contribution to American pharmaceutical education, then still in its formative years. In 1866, Frey had been elected a trustee of the College of Pharmacy of the City of New York[22]—today's Columbia University College of Pharmacy. The new trustee did not lose any time in impressing upon the college authorities the wisdom of securing the part-time services of his capable assistant. In 1867—just two years after he had entered Bellevue Hospital—Charles Rice was elected a member of the college.[23] In 1870, when Frey wished to retire from the Board, he suggested that he be replaced by Rice.[24] Thus, Rice became a member of the Board of Trustees serving in this capacity until he died. His first act as a trustee was the introduction of a code of ethics which was formally adopted in 1871. The same year, the college introduced written examinations, Rice being a member of the first committee to draw up the questions for these tests. Four successive presidents appointed him to the examination committee, of which he was chairman from 1890 until his death.[2] Yet his work on this important committee was only one of many services Charles Rice performed for the college. He was "practically the

manager of the scientific phases" of the school.[26] It was he who first proposed the establishment of a pharmaceutical laboratory.[27] For nearly twenty years he spent many working hours as chairman of the Library Committee, employing to best advantage his knowledge of scientific literature and of languages. Rice considered the building-up of this library his personal hobby and donated many of its valuable volumes.[28]

But, while it was true that the scientist—and bachelor—Rice spent even his leisure hours at work in laboratory and library, it is important to remember that he was also manager of the largest drug department in the country, a man of considerable business and administrative experience. This practical knowledge, too, proved most beneficial to the college. In fact, one of the first things he accomplished as a trustee was the installation of a businesslike accounting system.[29] When, in 1878, the college moved to new quarters, Rice headed the building committee under whose supervision the structure was altered to suit the purposes of a teaching institution. In 1893, when the college moved to its present location, Rice served in the same capactiy.[30]

With his outstanding scientific abilities, with his thirty years of close association with the college, it seems regrettable for the cause of pharmaceutical education that Rice never became a member of the faculty. J. P. Remington explains this circumstance with the fact that Rice "always shrank from lecturing or from any position which required the prolonged use of his voice."[31] But the obituary in the *American Druggist* had a quite different story to tell. It stated bluntly that Rice's "devotion to Sanscrit cost him the professorship of pharmacy at the College of Pharmacy of the City of New York."[32] The circumstances were as follows: Dr. E. R. Squibb had served on the college staff as lecturer on pharmacy. When his many responsibilities forced him to resign this position in 1872, Squibb recommended that Rice be appointed as his successor; but another man was chosen in his stead.[33] Inquiring about the reason, Squibb was told that the committee had "feared" Rice "might not be able to attend efficiently to the affairs of the college" since he had already undertaken

to teach Sanskrit to several young men. "Think of it!" was Dr. Squibb's comment, "Having a chance like that to get a man who was not only a most capable teacher of pharmacy, but a teacher of Sanskrit (sic) and of other things besides, and that they failed to appreciate their opportunity!"

It is to be doubted that the *American Druggist*, with which Rice had been actively associated for fifteen years, would have printed in such detail a story involving the College of Pharmacy of the City of New York—had it not come from a most dependable source. That Squibb recommended Rice as his successor may be taken for granted. Squibb was an "intimate and faithful friend" of the younger man whose qualities he was to recommend later—fortunately, with more success—to the members of the Pharmacopoeial Convention.[34] But in 1872, Charles Rice was still a fairly new figure on the pharmaceutical scene and it may well be that a teaching position was denied him because of personal favoritism or prejudice. Several years later, when his appointment to the faculty would probably have found unanimous approval, Rice had succeeded John Frey into a position of importance and responsibility and one which was very much to his liking.

Road to a Modern Pharmacopoeia

In 1870, the same year in which he was elected a trustee of the College of Pharmacy of the City of New York, Charles Rice became a member of the American Pharmaceutical Association. This marked the beginning of a relationship which was to prove as important to the Association as to Charles Rice. This great mutual influence was exerted despite the fact that Rice rarely took part in convention debates. As a matter of fact, through the thirty years of his membership he probably attended conventions less frequently than any other prominent member. Because he felt that the responsibilities of his hospital position required his constant presence in New York, Rice avoided attendance, especially of those meetings which were held in distant states.[35]

In 1872, two years after he had become a member of the Association, he was appointed Chairman of the Committee on

Adulterations. It is said that his reports on this subject have never been excelled.[36] Here was an assignment which suited perfectly not only the man's abilities but also his character. For Rice "hated shams; himself one of the most modest of men, he had a contempt for false pretense, whether in men or in drugs."[37] In the same year, he "came very near losing his life" by the explosion of an apparatus while preparing apomorphine which was then not available in the local market.[38]

Then, as though fate had just waited for the right man to appear at the right time, it presented this uniquely equipped scholar with the opportunity of creating the up-to-date work of standards for medicinally used drugs. Dissatisfaction with the procedure employed in revising the Pharmacopoeia had been mounting through recent years. The American Medical Association's apparent unwillingness to act on this matter had made it obvious that pharmacopoeial revision had become "the task and the responsibility of the American Pharmaceutical Association";[39] and the American profession of pharmacy was by now in a position to provide the men who could assume this task. At the Toronto convention of 1877, a committee of fifteen was appointed to draw up a plan of revision. Rice was elected chairman of this group, the Committee of Revision and Publication. He was impressed with the need for enlarging the scope of the Pharmacopoeia, for replacing the inadequacies of the work with thorough and detailed scientific standards. In formulating his elaborate plan for the guidance of the committee, Rice could draw not only on his thorough theoretical knowledge of chemistry and his practical experience with tests for chemical purity; his linguistic abilities, too, had enabled him to keep in constant touch with the pertinent facts about foreign pharmacopoeias and with the scientific information appearing in foreign publications. It was thus that the many items of pharmacopoeial information received from foreign sources in answer to an inquiry by the Secretary of State to the U. S. Ministers abroad, struck the committee chairman as "interesting" but not "new."[40]

The suggestions Rice made in his first report to the Committee of Revision contained most of the important innovations

which eventually became part of the 6th Decennial Revision (7th Edition) of the U. S. Pharmacopoeia. Having made his recommendations to the A.Ph.A. convention of 1878 and thus prepared the groundwork, Rice submitted his resignation from the chairmanship "in consequence of impaired health."[41] But a few months later, after it had become clear that the Association's inability to find a suitable successor was placing the entire work in jeopardy, Rice was forced "much against his wish" to re-accept the position.[42]

In 1879, the University of the City of New York conferred upon Rice the honorary degree of Doctor of Philosophy.[43] The draft report prepared by Dr. Charles Rice and presented by the American Pharmaceutical Association to the pharmacopoeial convention of 1880, recommended the adoption of certain "General Principles."[44] Among these were the use of the English language; the introduction of: an alphabetical arrangement instead of the customary division into chapters on "Materia medica" and "Preparations"; "concise but complete" descriptions of crude drugs; "concise and complete" tests of identity and purity of chemicals; likewise to be added were chemical formulas while the descriptions of processes for the preparation of chemicals were to be largely omitted. "Definite expressions of weight" were to be given in both decimal and apothecary weight; "parts by weight . . . in a decimal ratio"; temperatures in degrees of Centigrade and Fahrenheit; and a uniform method was to be outlined for taking the specific gravity of liquids.

Chairman of the Committee of Revision

Even before the pharmacopoeial convention met in Washington, in May 1880, the election of Charles Rice as chairman of the revision committee "was clearly indicated."[45] This election and the general approval with which Charles Rice's "plan" was adopted, marked the beginning of the modern U. S. Pharmacopoeia.

In line with the national character of the proposed new Pharmacopoeia, the convention of 1880 enlarged the membership of the Committee of Revision to 25 men from all parts of the

country. Traveling expenses required for a group of this size, together with the attendant loss of time, ruled out the practicability of frequent meetings; as a rule, the committee members did not meet more often than at the annual conventions of the American Pharmaceutical Association of which organization the majority were members,[46] and which elected Rice as its First Vice-President, in 1883. The greater part of the committee work had to be accomplished, therefore, through correspondence. "The remarkable executive abilities of Dr. Rice which, up to this time had not been prominently in evidence," soon became apparent. He selected qualified men for sub-committees which under his direction worked out details on specialized subjects. We have it on the authority of one of those engaged in this work that Rice "proved to be so well informed that he could offer helpful suggestions and criticisms even to men who had made a life specialty of the subject" under discussion.[47] The resulting reports were sifted and edited by Rice who then circulated them to the general committee by means of hectographed, consecutive numbered, circulars.[48] This procedure involved an enormous amount of work on the part of the committee chairman, and the thousands of pages of his manuscript representing committee circulars through twenty years are among the most remarkable work of this remarkable man. His labors were approved so thoroughly that the pharmacopoeial convention of 1890 re-elected him unanimously as Chairman of the Committee of Revision. When the convention reassembled another ten years later, in 1900, Rice was too ill to attend . He earnestly requested to be relieved of further responsibility, pleading his weakened physical condition and his greatly increased duties at Bellevue Hospital. But promises of assistance and especially the fact that the Board of Trustees of the newly incorporated "United States Pharmacopoeial Convention" was at last ready to relieve him of the burden of business responsibilities, induced Rice to accept the chairmanship once more.[49]

He died the following year, 1901, and the pharmacopoeia, completed under the direction of J. P. Remington, did not appear until four years after his death. But the spirit of Charles Rice was still apparent in the work. In a paper read before the Section

on Materia Medica and Pharmacy of the American Medical Association in 1896, Rice had advocated the introduction of average doses into the pharmacopoeia. He had criticized, further, the indiscriminate banning of synthetic products, barred from admission into the pharmacopoeia because of the proprietary rights involved. In his paper before this medical group, Rice had highlighted the ludicrous consequences of this policy which prevented the adoption of official standards for such frequently prescribed new drugs as Phenacetin, Antipyrin, and Sulphonal, while Salol was listed in the ten current pharmacopoeia only because the Committee had not been aware that the name and manufacture of this product, too, were protected by proprietary rights.[50] Rice was able to impress the members of the pharmacopoeial convention of 1900 with the soundness of his arguments. The new "General Principles" adopted included the introduction of average doses and the admission of "any synthesized product of definite composition which is in common use by the medical profession," unless it be "controlled by ***unlimited*** proprietary or patent rights."[51]

Other Publications

In 1876, midway between his appointments as Trustee of the College of Pharmacy of the City of New York and as chairman of the pharmacopoeial revision committee, Charles Rice undertook another assignment which made the benefit of his knowledge available to the pharmacists of America: he accepted the position of associate editor of the monthly publication *New Remedies* which later became *American Druggist*. Rice held this position for fifteen years, until 1891, when he became Reporter of the Progress of Pharmacy for the A.Ph.A. His own comment upon receiving this latter appointment was as follows:

> **"How he will be able to report to the A.Ph.A. the progress of pharmacy in addition to what he has already undertaken, is not readily apparent."**[52]

The issuance, in 1882, of the first modern U. S. Pharmacopoeia led directly to the need for another type of publication, the preparation of which again became the responsibility of Charles Rice. Not less than 121 preparations had been deleted from the

new pharmacopoeia, yet many of these were still used and likely to be prescribed by physicians throughout the country.[53] A supplementary formulary was needed. There existed a number of formularies, the New York and Brooklyn Formulary (1884) being the one with the largest circulation. Charles Rice participated in the work of the joint committee which had prepared and published this Formulary. In 1885, the A.Ph.A. appointed him chairman of its committee on unofficial formulas and he arranged a plan whereby the New York and Brooklyn Formulary, enlarged by the addition of other material, was developed into the "National Formulary."[54]

It has always been a cause of regret that Charles Rice never incorporated his encyclopedic knowledge of pharmacy and the allied sciences into the covers of a definite textbook which he was so well equipped to write. But such an undertaking was incompatible with the full work schedule to which he adhered until his death. His willingness to furnish specific information to all who applied to him for help was one of his "prominent characteristics."[55] Completely unselfish, he considered this work a labor of love to which he devoted many of his limited spare hours. Frequently, his answers to the flood of inquiries which came His way, constituted elaborate monographs. Said H. H. Rusby:

> "If his part were to be recorded wherever it exists in published works, the word 'Rice' would be one of the most conspicuous in the American literature of his time in Pharmacy and Chemistry, . . . Botany, Physics and Materia Medica, and in more than one department of literature proper."[56]

Professor Virgil Coblentz' *Handbook of Pharmacy* was one of the many works on which he collaborated. He wrote the introductory chapter dealing with the definition, history and arrangement of the different pharmacopoeias, and assisted in the revision of the complete work. He, likewise, revised and completed the American edition of *Askinson's "Perfumes and Their Preparation."*

A literary work of an altogether different nature occupied many of his spare hours during the last years of his life: the

revision of a Sanskrit Lexicon, originally published by the Russian Philosophical Society. In this connection, it should be reported that besides English and German, Rice spoke French, Italian, Spanish, Portuguese, Dutch and Turkish; that he wrote "with ease' Latin, Greek, Lithuanian, Hebrew, Arabic, Hindustani, Maharrata, Sanskrit, Persian and Pushto, and that he knew "something" of Russian, Chinese and Japanese. At the time of his death he was considered "one of the three best Sanskrit scholars in the world."[57] And—just as the committee at the College of Pharmacy had once charged—he *did* give private lessons in these languages to some students who showed exceptional abilities.[58]

Medicine Indebted to Charles Rice

It is not surprising that pharmaceutical and philological groups, the world over, rewarded Rice's distinguished services with honorary degrees and memberships. But it is significant that American physicians, too, paid their respects, recognizing that this pharmacist's work was of the greatest importance to medicine.

In 1890, he was elected an honorary fellow of the New York Academy of Medicine.[59] Physicians realized that—as one of their spokesmen put it—after a period of nihilism, when there had been "nothing in medical teaching between the diagnosis and the autopsy," Rice "had done much to rehabilitate therapeutics"; that he **"had done more than probably any one man to bring about a better understanding between physicians and pharmacists, and that medicine stands today better, more useful and more scientific for the life and work of Charles Rice."**[60]

"The Most Modest of Men"

In all statements made by those who knew Charles Rice, there is a remarkable unanimity of opinion about the character of the man. They were impressed with his industriousness, his readiness to help, his gentlemanly tact and consideration for the opinion of others. But most conspicuous was the modesty which Rice possessed to a degree that, at times, bordered on the excessive. Edward Kremers suspected that the real reason why Rice, in his later years, absented himself from A.Ph.A. meetings was his dis-

like of "being much made of."[61] It was this same modesty which led Rice to request the "suppression" of his name in connection with many published works that were based on his own knowledge and technical skill.[62]

His almost unbelievable modesty sprang from Rice's extreme sense of fairness and propriety. Two incidents well illus-

In 1885, a meeting of the College of Pharmacy of the City of New York voted to award Rice the degree of Master of Pharmacy. The dry language of the minutes of this meeting does not hide the fierce outburst which followed. The suggestion

"was met by the proposed recipient with such positive declination that it was reluctantly withdrawn. He suggested that the degree should never be conferred upon anyone who was connected by service with the college. The meeting was then adjourned."[63]

But Rice gladly accepted a similar degree from the Philadelphia College of Pharmacy.

The other episode occurred at the Pharmacopoeial Convention of 1890, which unanimously voted Charles Rice an honorarium of $1,000 for his services. This was a considerable amount of money for a man who had deliberately limited his income to the salary of a city pharmacist; he, nevertheless, refused to accept the check. The President of the Convention, anticipating just this reaction, ruled that he did not consider Dr. Rice present and that, therefore, none of his remarks or protests could reach the president's ear. But even this subterfuge did not work; Rice endorsed the check and turned it over to the pharmacopoeial fund, holding that "it would be unfair to his associates on the committee to accept the money."[64]

Finale

When Rice accepted the chairmanship of the Revision Committee for the third time, in 1900, he did so against the urgent advice of some of his friends.[65] They knew that he had overworked during every day of the 35 years since he had come to New York. As J. P. Remington expressed it:

"Work was not work for him; pleasure as most men knew it, was no pleasure to him; even rest was not rest. Work was pleasure, and change of work was rest, and when he could not sleep he rose from his bed and took pleasure in work again."

The statements of his friends indicate that Rice had not taken a vacation in years, if ever—claiming always that his duties did not permit this luxury. While his mind retained its brilliance, his body was failing; at the age of 60 he was spent. Even during his last illness, he insisted upon working in his library. He had some volumes removed from the book shelves and replaced the empty space with a pillow to rest his head. Thus, sitting in his chair, Charles Rice continued to dictate letters and to direct the work of his office.[66]

On May 13, 1901 he died at his residence on the grounds of Bellevue Hospital. Oddly enough, printed sources disagree about Rice's *last* days just as they do about his first days in New York. *American Druggist* gives the cause of death as "aortic aneurism which was complicated with chronic nephritis," while the *A.Ph.A. Proceedings* mention "cancer of the throat."[67] There may be those who believe neither to be correct, but that Charles Rice died from exhaustion.

And now it became apparent that the one-time unknown and friendless immigrant into pharmacy—although still without "next of kin"—had acquired in the meantime a formidable family ready to mourn and honor him: the pharmacists of America. After he had been laid to rest, the Pharmacopoeial Revision Committee resolved to prepare a suitable honoring of the deceased. It was decided to erect a monument to mark his grave, and to publish a memorial volume. The necessary funds, solicited through an appeal in *American Druggist*, were quickly oversubscribed. The monument was unveiled in Woodlawn Cemetery on July 1903. It was the first monument ever erected by pharmacists to a pharmacist in the United States, and bears the inscription:

CHARLES RICE Ph.D.
Born October 4, 1841
Died May 13, 1901
Erected by his friends in grateful appreciation of his eminent services to medicine and pharmacy.

In the fall of the same year, a bronze relief bust of Charles Rice was unveiled at the College of Pharmacy of the City of New York.

Thus did the pharmacists of America pay homage to the memory of an illustrious man who was an *unknown*—in every sense of the word—when he "came to America and became an American citizen by choice."[68] Because this country gave him his opportunity, it reaped the rich harvest of his talents. And it seems symbolic, therefore, that a shroud of mystery obscures all knowledge of his past; that no one was ever found who had known him, or known of him, before he came into New York harbor.

Now that he had gone, his friends were left to wonder about the strange case of Charles Rice—and about the void which his parting had left in the affairs of Pharmacy. They knew that his place would be filled,

"but not by the same kind of man, for Charles Rice stood alone and above his fellow-laborers in the peculiar makeup of the mind with which nature had endowed him."[69]

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Benjamin E. Holsendorf*
1874-1944

GEORGE F. ARCHAMBAULT

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Pharmaceutical Historians will undoubtedly record the name of Benjamin E. Holsendorf, Pharmacist Officer in the U. S. Pub-

*Presented before the joint meeting of the Section on Historical Pharmacy, A.Ph.A., and the American Institute of the History of Pharmacy at Jacksonville, 1949.

lic Health Service, as belonging to that distinguished group of American pharmacists who, by their investigations and deeds, have made the United States and the world a safer place in which to live. His death at the age of 70 brought to close the brilliant career of an outstanding pharmacist and Public Health Service Officer.

Mr. Holsendorf was born in Alexandria, Virginia, on February 21, 1874. His boyhood days were spent in the state of his birth. He attended grade schools at Danville and Alexandria, Virginia.

In 1896, Mr. Holsendorf graduated from the College of Pharmacy of Howard University with the Ph.G. Degree. In 1898, the degree of Phar. D. was conferred upon him by the same institution.

Mr. Holsendorf held a certificate of registration to practice his profession in the State of Maryland, having passed the State Board Examination in April 1896, which examination was held at the Maryland College of Pharmacy.

The following June (June 1897) Mr. Holsendorf entered the employ of the U. S. Public Health Service as one of its pharmacists.

Concerning his Service career, which covered nearly half a century, Mr. Holsendorf once modestly stated: "I have, in addition to the dispensing of medicine, discharged the usual duties of a pharmacist at hospitals, quarantine stations, yellow fever camps and in disinfecting steamers."

How well those duties were done can best be stated by quoting directly from a portion of an article "Pharmacy in the U. S. Public Health Service . . . Then and Now" as appeared in the Practical Pharmacy Edition of the *Journal* of the American Pharmaceutical Association, vol. IX, No. 6, in June of 1948.

"Rodent Control"

And then there was Benjamin Holsendorf. Mr. Holsendorf devoted the greater part of his Service life to a study of rat infestation of ships and its prevention. He established ratproofing of ships as an outstanding contribution to the control of overseas transfer of bubonic plague. The achievements of pharmacist Holsendorf in this respect are well stated by one of the Service's outstanding medical officers, who was intimately concerned with quarantine administration and procedure over a period of many years:

". . . The danger of the introduction of plague by ships has been reduced, largely through efforts of the U. S. Public Health Service, to the point where the mathematical chances of its occurrence are quite small. Since 1900, the proportion of rat-infested vessels has been reduced from around 80% or more to 10%, and the numbers of rats on them from figures into the thousands to an average of about ten per infested vessel, with heavily infested ships almost unheard of at American ports. While to no one man can the credit for all of this be given, there is no question that the persistent and energetic efforts of Mr. Holsendorf have constituted one of the outstanding factors of its accomplishmnt.

"Mr. Holsendorf's achievements offer an excellent example of the teamwork accomplishments of collaborators of different temperament, since it was his association with Dr. Grubbs, a brilliant officer, always on the alert for new ideas, who was impressed with the observations on ships made by Mr. Holsendorf in Puerto Rico. He associated himself in the study, and with his energy and dynamic personality pushed it to the fore. It was Mr. Holsendorf's determination and persistence, coupled with his remarkable capacity for detailed observation, that carried it through and finally forced its inclusion as a fundamental procedure in the prevention of overseas plague transfer.

"Of late years, Mr. Holsendorf broadened his field to include ratproofing of buildings, and while it is true that this has long been established as an effective means of eradicating rats in shore communities, he added material improvements and has recently been of marked assistance to health organizations in states were anti-rat campaigns have been instituted in the effort to stamp out endemic typhus."

To enable the reader to visualize the scope of the public health activities of pharmacist Holsendorf, a review of the highlights of his career is presented:

After graduation from pharmacy school in May, 1896, Mr. Holsendorf entered general pharmacy practice for several months in the Baltimore, Maryland, area. He then took the examination for entrance into the Service, which at that time was called the Marine Hospital Service. He was appointed as a pharmacist(then termed Hospital Steward, third class). Shortly thereafter Mr. Holsendorf was assigned to duty at the U. S. Marine Hospital in Chicago, then at the hospital in Evansville, Indiana. In 1898 he served on a special duty detail at Franklin, Louisiana. This was during the yellow fever epidemic. He contracted the disease during this period. In March 1899 he entered what was to be his life work—foreign quarantine activity. He was ordered to Puerto Rico to assist in the establishment of the quarantine stations in that recently acquired territory. After 16 months service in Puerto Rico, Mr. Holsendorf was ordered to Havana, Cuba, to assist in similar work. Four years later he returned to Puerto Rico and was reassigned to quarantine duty at that station. In December 1920 after a few short tours of duty at Philadelphia, Baltimore and Cape May he was transferred to Rosebank, New York, quarantine station where he remained for the balance of his Service career. It will be noted that much of Mr. Holsendorf's activities were concerned with combating the contagious diseases: yellow fever, plague and cholera.

From 1925 to the end of his career, Mr. Holsendorf specialized in studies concerned with the ratproofing of vessels. Mr. Holsendorf was joint author of an article "The Fumigation of Vessels for Destruction of Rats" which appeared in the U. S. Public Health Reports of June 20, 1913. He also was the author of "Rack and Disinfector for Clinical Thermometers" which appeared in U. S. Public Health Reports, March 16, 1917. He personally interested a number of Service officers, foreign representatives, naval architects, ship builders and other personnel in the method and technique of this type of work, which has led to the present system and techniques employed in the permanent control of rat life on ship board. An interesting lecture on "Ratproofing of Vessels" given February 6, 1930, to the Foreman's School of the Newport News Shipbuilding and Dry Dock Company is to be found in Mr. Holsendorf's file, which talk gives an excellent in-

sight as to the character of this pharmacist and his strong devotion to the Service and his specialty.

He appeared to be one who never forced his opinions upon others, but his opinions were so well prepared, and so logical that it was usually impossible to find any flaws therein. Consequently, his advice was earnestly solicited by his colleagues. It appears that he performed his duty cheerfully, modestly and with meticulous care. His contribution to pharmacy and public health was made with no thought of personal glorification.

Mr. Holsendorf died in 1944, after devoting more than 40 years of his life to the Service. The professional career of this "fine old man of pharmacy" ends with the following statements found in the last efficiency reports executed by his superior officer: "He is an experienced quarantine man and knows more about his specialty (ratproofing of vessels) than any other man in the Service . . . He has made invaluable contributions to progress in ship architecture and ship sanitation through his tenacity of purpose and constant devotion to his specialty . . . Assuming that this officer will be retired in the very near future I close his 'record' with the statement that, in my opinion, he has contributed a work of enduring value. He has definitely modified the principles of ship construction in his effort to devise methods to build rats *out* of vessels."

An Experiment With Pharmaceutical Administration at Howard University*

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In the Fall of 1938 our attention was focused upon the curriculum and the specific needs of the students who were coming

*Read before the Section on Pharmaceutical Economics at the 1949 meeting at Jacksonville.

to Howard University. After carefully evaluating our curriculum a series of questionnaires were sent to fifty selected practicing pharmacists and to wholesale drug firms and bankers in the cities where the fifty pharmacists were located, the purpose being as follows:

(a) To ascertain the area of training in which the college had succeeded or failed to provide the necessary instruction for competent service and operation; and

(b) For a verification of or correlation between the opinions of the pharmacists and those with whom they did business.

The results were interesting and consistent, each group indicating that there was a dire need for greater instruction or experience in (a) "Business Acumen", and (b) "Managerial Ability". The phraseology in the responses was identical in many instances.

Additions to our curriculum were effected immediately within the frame-work of already existing courses in our college of liberal arts through the department sof commerce and economics. The following courses were added (3 semester hours each): economics, accounting, principles of business, marketing, retailing, commercial law, and salesmanship.

It is needless to say that this was an improvised arrangement and over-taxed the student in this area of study.

In the fall of 1946 an agreement was had with our college of liberal arts whereby an instructor was assigned to the college of pharmacy to develop, organize and present a sequence of four (4) courses, open only to students in the college of pharmacy. After a careful study of available references, conferences with wholesalers, and persons in the United States Department of Commerce our present sequence was inaugurated. Today our offering in this area of instruction begins in the junior year, spring quarter, with a 5-hour course in marketing of drugs, followed in the senior year with three 5-hour courses in drugstore management I (merchandising), drugstore management II (accounting), and commercial law.

In the four courses in pharmaceutical administration the principal considerations are: first, the limited time given to such courses in the curriculum, and second, the use the student will have for the material. Statistically, 98 per cent of our students enter retail pharmacy. For this reason emphasis is placed on applied subject-matter, with stress on the 'necessary-for-use' material rather than slanting the courses along the traditional lines of marketing, economics, et cetera.

The course in marketing is taught from a manufacturer's viewpoint and serves as a background for retailing. The retailer, being on the receiving end, should know the reason-why of manufacturers' plans, methods and policies. General marketing background is presented with particular application to the drug trade. Among the topics are: channels of distribution, types of middlemen, types of retail outlets, transportation, storage, trade practices, legislation, the export market, Fair Trade, and the Robinson-Patman regulations.

One aim of the course is to stress the importance of a knowledge of proven principles through research, adequate testing and planning timing. The manufacturer's methods of research reveal to the student the sources of information and procedures. Sales promotion, with its coordination of plans for advertising, display and selling, brings in the whole field of principles. To vitalize sales promotion, the class follows current campaigns such as Dial Soap, Breatholator, et cetera. With respect to the manufacturer, other considerations are as follows: competition, consumer market for the product, packaging, pricing, methods of selling selected outlets, and reactions to deals and combination offers. During the sequence the class visits a wholesaler where the internal operations through which an order passes are visibly presented.

The course in accounting includes opportunity for drill and exercises. If a pharmacist is to do all of his own bookkeeping we feel that a one-year course is necessary. If an accountant is to be employed the pharmacist should, at least, have an intelligent understanding of the principles involved. Our major concern is in the area of control, merchandise control mathematics, accurate record keeping, and a sound knowledge of interpretation.

The course in pharmaceutical law covers legislation as it affects the retail pharmacist; local, state and Federal legislation also is included in the course as that part of commercial law affecting responsibility as party to a contract, party to a negotiable instrument, as landlord or tenant, and as employer. Stress is placed upon the Federal Food, Drug and Cosmetic Act; The Wheeler-Lea Act; The Federal Trade Commission Act; The Federal Insecticide Act; The Uniform Narcotic Drug Act; and The Federal Caustic Poison Act. Cases are studied in which pharmacy has been involved, and the trend of court decisions is noted. New material to bring laws to current status is assigned. Each student is responsible for knowing the pharmacy laws of his particular state. During the course the class visits an open hearing of the Federal Trade Commission to observe the law in actual operation.

It is probable that within the next year attention will be directed toward courses designed to familiarize the student with the laws covering Wages and Hours, and Taxation, and Business English.

The Problem of Pharmaceutical Administration*

CHARLES W. BLIVEN
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I believe it is in full accord with the objectives of this Conference to strengthen the field of pharmaceutical administration in our schools and colleges of pharmacy so that our graduates, the end-products of our efforts, will be better trained in the "business of pharmacy," as Dr. Elliott has so aptly expressed it.

*Read before the Conference of Teachers of Pharmaceutical Economics at the 1949 meeting at Jacksonville.

Although the question of a four-year or a six-year curriculum for pharmacy has not been resolved by our parent association, I do believe schools and colleges should not delay in implementing that part of The Survey having to do with pharmaceutical administration. The Survey indicates, and I am sure all will agree, that this field has been neglected too long.

Recent meetings of at least two Districts of Boards and Colleges indicate that several schools will retain the four-year curriculum, at least for the time being. The question confronting those schools choosing the four-year program, and whose curricula are deficient in pharmaceutical administration subjects, is how to make room for even the minimum amount of this work.

Much has been said about "dead wood" in the pharmacy curriculum, but as far as I know, few if any specific recommendations have been made in this regard. Thus, a faculty committee charged with the task of making a place for administration courses in their curriculum find that *they*, themselves, must make the decision concerning the deletion of courses or of course content, and/or the integration of courses.

In revising our own curriculum, which admittedly was deficient in pharmaceutical administration, the committee on curriculum revision was confronted by the problems just mentioned. "Dead wood" was not immediately apparent, and I am sure every faculty has a similar feeling toward its own school's curriculum. Therefore, the committee turned its attention to eliminating repetition of course work, to re-evaluating individual courses, and to integrating courses whenever more effective teaching would be the result.

One of the major clues as to where time could be saved without the deletion of essential material, was found upon comparing the course content of the service courses in general chemistry, physics, and the first-year pharmacy course in principles and procedures. Much of the material covered in the beginning pharmacy course was found to be presented in these basic science courses. Thus, it was decided to eliminate the beginning course

given in the first year of pharmacy, and to integrate the essential principles and procedures with the second-year course in operative (galenical) pharmacy. The elementary course in physics, previously given in the second year, was then included in the freshman year, to permit completion of as much of the basic science as possible before the student begins work in the applied science courses of pharmacy.

Pharmaceutical Calculations, formerly given as part of the first-year course in pharmacy, was established as a separate course in the second year. The time devoted to this course has been increased, and its separation from the beginning pharmacy course will permit the emphasis which rightfully belongs to the calculations course.

A careful study of the scope of the courses in operative (galenical) pharmacy and inorganic pharmaceutical chemistry revealed another place where time could be saved. Eleven credit-hours were being devoted to these two courses. The work in operative pharmacy consisted primarily of the study of the various classes of official preparations and the preparation of typical examples of each class in the laboratory. Inorganic pharmaceutical chemistry included the study, preparation, and qualitative testing of official inorganic chemicals and preparations.

When the time being devoted to this work was re-evaluated in the light of present-day practice of pharmacy and the change in emphasis exhibited by the official compendia, it was deemed appropriate to combine these three courses (principles and procedures, operative, and inorganic pharmaceutical chemistry) into ten credit-hours of general pharmacy.

For the purpose of this discussion, the importance of the changes I have mentioned lies not in the fact that the basic pharmacy courses will be strengthened by the integration of the work, but in fact that it has been possible thereby to make room for a three semester-hour course in pharmaceutical accounting in the junior year.

A study of the junior and senior years of the curriculum did not reveal the possibility of integration of courses as was possible in the first two years. However, when the time being devoted to quantitative chemistry and drug analysis, a total of eight semester-hours, was considered and the scope of the two courses was studied, it was decided to make the course in drug assay an elective rather than a required course.

That this decision is sound, is borne out by referring to the preliminary draft of the report of "The Survey" Consultative Committee on Physical Sciences and Mathematics. This report states, "It is the opinion of this committee that, in the general curriculum, the time necessarily required for training in drug assay may be invested to better advantage in other course offerings such as introduction of colloids, biological chemistry, and chemistry and pharmacy of medicinals."

By changing the course in drug assay from a required to an elective course, it was possible to extend the work in the chemistry and pharmacy of medicinals from three to six semester-hours. The laboratory work will include work on proximate assays and other procedures peculiar to pharmaceutical analysis and not covered in the quantitative chemistry course.

In the last semester of the senior year, the course in pharmaceutical law was increased from one to two semester-hours and the course in pharmacy management from two to three semester-hours. These increases were possible through the re-evaluation of credit being given for courses offered in the last semester.

In retrospect, it has been possible, through careful study of our curriculum, to increase the work in pharmaceutical administration from six to a total of eleven semester-hours. The courses which will be offered in this field beginning next year and the amount of work previously given in each are as follows:

Economics.....3 hours—Previously 3 hours
Pharmacy Accounting.....3 hours—Previously none.

Pharmacy Management.....3 hours—Previously 2 hours
Pharmaceutical Law.....2 hours—Previously 1 hour.

In the first draft of the report of The Survey's Consultative Committee on Pharmacy Administration, the courses recommended for first priority are (1) pharmacy accounting; (2) pharmacy mangement policies; (3) pharmacy operation policies; and 4) pharmaceutical law. The basic course in economics received second priority.

After examining the recommended content of the course in pharmacy operation policies, it seems to me that this material could be integrated with the course in management policies. At least it does not appear to warrant time equivalent to three semester-hours. Perhaps these statements would not be made by one with a broader knowledge of that field; on the other hand, I believe this opinion was shared by some of the members of this Conference attending the San Francisco meeting.

The course in economics has been retained in our curriculum even though it is given second priority by the Committee. I concur with our chairman of last year, that this course is basic to the courses in pharmaceutical administration, and should receive first priority.

Thus, the courses in pharmaceutical administration which have been included in our curriculum are considered to meet, at least to a major extent, if not in all respects, the recommendations of the Consultative Committee.

In any discussion of the deficiencies in pharmaceutical administration, one can hardly avoid the subject of teachers for the field. So much has been said and written on this subject that anything I have to say would be mere repetition. But I cannot conclude without commenting that the benefit derived by students in such courses as pharmacy management will be, as in any course of instruction, in direct proportion to the quality of instruction given. I believe it is safe to say that instruction of the best quality cannot be offered by the majority of the schools because

of the lack of qualified instructors. Furthermore, this storage has no doubt been one reason for the slow development of instruction in pharmaceutical administration.

The American Council on Pharmaceutical Education has established the standard that beginning in 1952, schools and colleges of pharmacy shall have a full-time teacher in pharmaceutical administration. While this is a most worthy objective, I do not believe this standard, in itself, will produce instruction of the best quality in all courses in pharmaceutical administration.

At the San Francisco meeting of this Conference, considerable time was devoted to discussion of this then proposed standard. A resolution was presented to the parent association to the effect that the standard of a full-time teacher in pharmaceutical administration should not be made compulsory. This resolution was presented to the American Council on Pharmaceutical Education by the Executive Committee of the American Association of College of Pharmacy, the group to which it had been referred. It apparently did not influence the thinking of the Council, however, as this requirement is included in standards to be used as the basis for accreditation.

It is extremely difficult now, and I fear that it will be for some time to come, to find one person qualified to instruct in all courses in pharmaceutical administration. Too, a teaching load of twelve or even fifteen semester-hours for an academic year does not constitute a full-time teaching load and certainly could not command a sufficiently high salary to attract the better qualified men into this field of the pharmacy curriculum.

Without any intention of criticizing those currently teaching the course in pharmacy management, I think that in general, the best teachers for this course will be found among those persons actively engaged in the field. Certainly, it is many times more essential as a prerequisite to produce a well-qualified teacher of this subject that he have practical experience in his field, than would be the case for teachers of the basic or even some of the advanced courses in the pharmacy curriculum.

The course in pharmacy management cannot be compared with other courses in pharmacy, particularly those involving fundamental principles and processes or well-defined experimental procedures. It should be a truly applied course, based upon sound business policies but well embraced by up-to-date operating procedures.

While many schools will find it necessary to call upon teachers in business administration who have no working knowledge of the "business of pharmacy,' such a policy, in my opinion, will not result in the best type of instruction for our students. If pharmaceutical administration is to take its intended place in our schools and colleges, we should begin now to encourage some of our better qualified pharmacy graduates to undertake graduate work in business administration schools. Individuals with this combined background in pharmacy and administration are the hope of the future in the administration courses of accounting and management. It is this type of individual to whom we should look for the development of truly strong departments.

In conclusion, I should like to repeat that time can be found in the four-year curriculum for the inclusion of sufficient well-organized courses in pharmaceutical administration to provide our graduates with a good basic understanding of the "business of pharmacy." The Survey has again indicated the need for this training and the American Council on Pharmaceutical Education has indicated its intention of seeing that the program is implemented. It is now up to the schools and colleges to provide the best programs possible at this time and to be continuously alert to ways and means of strengthening this new department as opportunities are presented.

Can Pharmacy Be Taught Adequately in Two Years

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Albany College of Pharmacy

The Pharmaceutical Survey has recommended that 22 semester hours out of a total of 135 be allocated to the subjects given

by the pharmacy department in the proposed curriculum for the four year course. Since this is the same number recommended in the preliminary draft with essentially the same subjects, it is assumed that the allocated hours to each individual subject would be substantially the same. These are 8 to 10 for general pharmacy, 8 for dispensing, 2 for pharmaceutical calculations, and 2 for manufacturing laboratory, all of which with the exception of the course in pharmaceutical calculations are to be given in the third and fourth years.

It is true that The Survey does not limit the courses to those specified in the preceding paragraph, since they are listed with the expression "among others". Whether this means that if others are given it would mean a further subdivision of the 22 hours or whether more hours should be added is not stated. However, if we consider the already staggering total of 3488 clock hours of instruction for the complete course—which does not provide even for the inclusion of English and certain other courses many of us deem essential—it does not seem possible to increase the total devoted to pharmacy beyond 22, unless we do it at the expense of some other department.

Before we can decide whether 22 hours is adequate and whether the pharmacy program can be covered properly in two years we must consider not only what courses are to be offered but also the content of each course. Probably the program as contemplated by The Survey can be given in two years but it means turning over much of which has been included under pharmacy to the department of physical sciences.

Nearly all schools have considered the teaching of the fundamental principles and processes of pharmacy as the first course to be given by the pharmacy department. It is difficult to see the wisdom of giving this over to chemistry and physics both of which are usually under the direction of a teacher without pharmaceutical experience and in many cases without any pharmaceutical training. Certainly before we consent to such a transfer we would do well to consider our experience with students who have begun the study of pharmacy after two to four years of study in

other colleges even though physics and chemistry have been included in the previous program.

It is also difficult to see the advantages of including the "pharmacy of medicinals" in the department of physical science. This probably refers to New and Non Official Remedies which are not essentially different from those found in the U. S. P. and N. F. and which require no special treatment. Certainly no teacher of dispensing pharmacy for example would outline a lecture or a laboratory course without including the newer remedies, the dispensing of which either in the original package, or in combination with other drugs presents no different problem than found in official products. At the present time about 50 per cent of New and Non Official Remedies are to be found in either the U. S. P. or N. F. and eventually most of them will find their way into the official compendiums in one form or another. Thus it does not seem wise to consider them as separate departmental entities or for that matter as separate subjects in the same department.

Perhaps a more controversial subject would be inorganic pharmaceutical chemistry including the manufacture of inorganic chemical products. Since, however, there is little difference between the manufacture of a chemical preparation and a chemical salt—for example, yellow wash and yellow mercuric oxide—there seems to be no good reason for transfering this to another course in another department. It falls naturally into a pharmaceutical course with the other preparations of the U. S. P. and N. F.

If we are to include the above three divisions in the pharmacy department's schedule it is obvious that 22 semester hours given in two years is not enough. It is also obvious that since these are now included in the recommended courses of the department of physical sciences, a transfer of hours could be accomplished without adding to the grand total, but that for proper sequence a minimum of three years should be required. If there is any "dead wood" in our courses we should be able to remove it in the pharmacy department just as well as it could be removed by any other department. Certainly it can be done at least as

well by those who are more closely connected with modern pharmacy as by those in a different field. Arm chair philosophy or wishful thinking will not do it, we must consider pharmacy as it is practiced today and is likely to be in the near future. We will have to consider the vast majority of neighborhood and rural pharmacies and not confine our thinking to the very few strictly professional pharmacies. It is still the chief function of practically all of our colleges to prepare undergraduates for the field of retail pharmacy or for the graduate school. Industrial pharmacy and hospital pharmacy properly belong in the graduate school.

In conclusion may I present the following schedule for the pharmacy department with the understanding that its flexibility be broad enough to permit rearrangement as may best fit the individual school.

1st or 2nd Year	Pharmaceutical Calculations	3
	Introductory Pharmacy	3
2nd year	General Pharmacy I	6
3rd year	General Pharmacy II	6
	Dispensing Pharmacy I	6
4th year	Dispensing Pharmacy II	6
	Total	30

A Visual Aid in the Teaching of Dispensing

A. E. SLESSER AND EARL P. SLONE
University of Kentucky

One of the problems in the teaching of dispensing is that of familiarizing the student with prescriptions as they appear in the physicians' handwriting. As anyone familiar with the matter knows, this is sometimes a problem because of the normal incidence of illegibility of handwritten documents. If the prescription is written for specialties with which the pharmacist is unfamiliar, the difficulty of reading the prescription is enhanced.

Thus, the two phases of the matter are inter-related: adeptness in deciphering handwritten prescriptions may aid in the recognition of prescription specialties and combinations; familiarity with prescription specialties often aids in anticipating and translating the written order.

The large number of new prescription specialties appearing almost daily create a problem for the dispensing instructor and student. It is obviously impractical to attempt to cover all specialties, and yet it is important that, insofar as possible, the student be familiar with many which are commonly prescribed. Hence, the problem of selecting those specialties which should be covered in the dispensing course must be considered. While a course in new and modern drugs (New and Non-Official Remedies, etc.) is helpful in acquainting the student with new prescription specialties, it is felt that inclusion of such specialties should also be a part of the dispensing course with the emphasis placed on the compounding and dispensing aspects.

The prescriptions used for instruction in dispensing courses in colleges throughout the country are usually of either of two types: typewritten prescriptions or handwritten prescriptions. The former afford the student no practice in reading physicians' handwriting; the latter usually (if they are originals) are older prescriptions (recent ones must legally be retained in the store files for several years) and often are re-used year after year, which adds to their antiquity. The recent Pharmaceutical Survey has disclosed what any practicing pharmacist knows to be a fact: that prescription writing trends have changed considerably during the past few years. Hence, while there is no denying that certain basic principles and applications are common to all prescriptions, older ones as well as newer ones, the older ones do not reflect those the student will encounter when he begins to practice the profession. Moreover, it has been our experience that there is an obvious diminution of interest on the part of the student when the antiquity of the prescription is evident.

As a possible and at least partial solution of the problem outlined above we have adopted a procedure of photographing pre-

scriptions for still projection on a screen for group study by the class. The student reaction to this type of instruction—which constitutes only one phase of the course—has been most favorable and the effectiveness of the method seems to be all that one could ask.

New prescriptions are photographed each summer for presentation during the following school year, thus keeping abreast of current trends. Prescriptions to be photographed are carefully selected to demonstrate practical, interesting, and instructive dispensing applications. Complexity is not necessarily a prerequisite for inclusion—occassionally a prescription calling for a specialty to be poured out (or, if a tablet or capsule, counted out) may be included if the handwriting makes the name difficult to decipher or if there is some other special point of interest involved.

The composition of individual reels rests on the desires of the instructor. We prefer to begin with reels which consist of the same type of preparations: all "shake" mixtures or all ointments etc., at the beginning and then conclude with reels of miscellaneous types, simulating what the pharmacist would actually encounter in practice. Incidentally, we retain the film in reel form and use a projector having a manual ratchet for movement of the film.

The procedure consists of photographing current prescriptions taken from files of drug stores in the city. These are projected on the screen before the class or class section. Individual students are then called upon to read the prescriptions, translate them, point out any incompatibilities and describe the method of compounding, packaging and labeling the prescription. The instructor has ample opportunity for questioning the student reciting, or others in the class, about any phases of the prescriptions as a whole or individual ingredients therein. At times some of the prescriptions illustrate errors of omission or commission on the part of the pharmacist who compounded them (particularly with respect to lack of notations on special techniques or special labeling instructions) and this, of course, gives oppor-

tunity to point out the importance of including such information. The recognition of narcotic prescriptions, especially some of the newer ones which fall under the Harrison Narcotic Act is facilitated by this method of teaching. Questions about the refillability of each of the prescriptions are discussed.

An interesting variation can be introduced by using the films in combination with a wire or magnetic tape recorder. The instructor may privately make a recording of the type of recitation he desires the student to make on the prescriptions and use the play-back and film to provide audio-visual aid in the early phases of this type of instruction. By using a recorder, a class recitation may be preserved for future play-back to the same class section or a different one. Other variations are possible.

We have been able to eliminate some of the guess work in selecting the particular prescription specialties to be emphasized by photographing prescriptions from the files of drug stores located in various sections of the city. Thus the prescription writing trends of any particular sections—and they do vary, of course, with different sections—are presented to the student. Since many of the graduates remain in the city to practice, they are often aided by this regional selectivity. While this particular advantage is somewhat restricted to colleges in larger towns, it serves to bring before the student different facets of prescription writing and points out the diversity he may encounter in the future.

One outstanding feature of the film type of instruction is that it is neither complex nor expensive. For photography the only capital outlay required is that for a fairly good camera. A small, inexpensive, still projector having a manual ratchet for moving the film serves for projection. In our work we have used a Contax camera having a Zeiss sonar F 1.5 lens. A contameter close-up attachment is used on the lens. We use 35 mm. direct positive film. The prescription to be photographed is removed from the file (in some cases it is not even necessary to do this) and, using the illumination of either one or two goose-necked lamps having 60 watt bulbs, the prescription is photographed.

Obliteration of the store and physician identity may be accomplished by applying strips of adhesive tape over the names. We have used the following exposure successfully: with two lamps and with aperture F 8, 1/50 sec. The distance between the lens and the prescription is approximately 30 cm. Other equipment and procedures for photographing could, of course, be used.

We present for consideration the following advantages of this type of prescription presentation : (1) modern prescriptions to arouse the students' interest; (2) practice in reading physicians' handwriting; (3) exposure of the student to newer prescription specialties; (4) practice in recognizing incompatibilities and methods of handling; (5) interest and stimulation of group participation; (6) permanent, compact, easily projected and easily stored prescriptions.

Some use is being made in certain schools of the opaque projector, whereby a prescription or facsimile can be placed in the instrument and projected on the screen. This method is fairly satisfactory provided current prescriptions are available for projection. Usually this is not possible because most stores are reluctant to allow prescriptions to be removed from the files and transported outside the premises. Moreover, the urgency of returning the prescriptions as soon as possible after projection does not afford opportunity for re-study of individual prescriptions. The advantage of the described method over that of the opaque projector are apparent.

The visual method described in this paper is offered as a part of the second semester laboratory phase of dispensing. The first semester is devoted to the compounding of prescriptions which have few or no incompatibilities, for the purpose of developing manipulative skill in the student. We offer dispensing at the present time only as a senior course.

To summarize, we present herewith what we believe to be a practical, relatively inexpensive and effective aid in the teaching of dispensing which will offer the student (and the instructor)

opportunity to observe current prescription writing trends; give the student practice in reading and deciphering prescriptions; help him to become familiar with some prescription specialties which are being prescribed; afford him practice in the recognition of incompatibilities and the methods of handling; help him to realize the importance of and develop the habit of reading each prescription carefully and at length before attempting to compound it.

ADVANCED CREDIT FROM CANADIAN SCHOOLS

Concerning the status of advanced credit from certain Canadian High Schools (Ontario), the following is quoted from a letter, dated December 3, 1949, received from Dr. Helen Dwight Reid, Chief, European Section, Division of International Relations, Office of Education, Federal Security Agency, Washington 25, D. C.:

"It was the prerogative of the collegiate institute under the older system of education in Ontario to offer an extra year called Upper School, which was really a Grade XIII. For this year's extra work, the universities allowed freshman credit in subjects covered by the certificate. Beginning in September 1937 the name of the certificate was changed from Upper School Examination Certificate to Secondary School Senior Graduation Diploma, issued by the Department of Education. In either case the credits allowable amount to approximately one year of advanced standing at the junior college levels. The following semester hours of credit may be allowed for the specific subjects taken by the particular student: English, 6; history, 6; German, 6; Greek, 6; mathematics, 8; botany and zoology, 5; chemistry and physics, 8; Latin, 6; French, 6; geography and economics, 4; geology and mineralogy, 4; Spanish, 4."

Dr. Reid indicated her willingness to advise member colleges as to the evaluation of credentials in any individual case if anyone wishes to present them to her.

The President's Page

The time has come to build soundly for the future of Pharmacy. This profession cannot succeed and keep pace with other professions unless it has thoroughly trained, far-sighted leaders vitally interested in and loyal to the profession and its leaders. Pharmacy must have a thoroughly trained membership in order to maintain and improve public confidence. As never before, Pharmacy needs organization, trained and loyal leadership and public confidence. Herein lies the challenge to Pharmacy today.

This is a challenge to the colleges and to the membership of the profession as well. Pharmacy must present a united front, definite in purpose, strong in resolve and persistent in effort in demanding equitable consideration and recognition of pharmaceutical education in public institutions of higher learning. As to administrative organization, Pharmacy should be in such a position as to retain its individuality, maintain autonomy and place it on a basis equal to other groups. Pharmacists must demand for pharmaceutical education such financial support that will permit of proper growth and development and which is consistent with the merits and needs of the profession of Pharmacy in the state. If Pharmacy is rendering a service to the state, then it is worthy of not only that support which its present service merits but of that greater support which will provide facilities to improve the training of our future pharmacists so that they will be capable of rendering a broader and more efficient type of service.

Pharmacy itself must become more aggressive toward establishing more adequate standards. Pharmaceutical education must be advanced to a point of parity with the educational standards of other professions. Pharmacy must be prompt and prepared to meet the educational and competitive demands of the day.

The American Association of Colleges of Pharmacy has arrived at the point where it must make an important and significant

decision, either to go forward or to become stagnate. A series of resolutions were presented at the Annual Convention in Jacksonville, Florida, and are to be brought up for further discussion and action at the next meeting to be held in Atlantic City. All members of this Association should give these resolutions serious and thoughtful consideration. Possibly as now formulated they may not represent the extent and form of advancement that is suited to present conditions and possibilities. It is essential, however, that this Association take action which will represent a reasonable degree of progress and which will serve as a basis for future advancement when conditions become opportune. Frankly, it appears that this is an opportunity to lay a solid foundation for future building.

The challenge before the colleges must not and can not be regarded lightly. There is so much at stake that these resoultions must be given most thorough and serious consideration. It is to be hoped that personal and individual considerations will be subordinated and that the whole pattern and progress and future welfare of the profession of Pharmacy will dominate the thinking. It is to be hoped also that the discussion will be sincere and presented on a clear understanding and a thorough investigation of the facts. It is to be hoped also that the decision will not be precipitate. If more time is desired for further consideration, it would be definitely advantageous to postpone final action.

The Pharmaceutical Survey has without question provoked careful thinking, discussion, and interest in its recommendations. It is to be noted that the more thought and the more discussion on the problems presented, the more favorable the attitude becomes toward setting up goals towards which Pharmacy must aim and progress. It cannot be emphasized too strongly that the time has come to build soundly for the future of Pharmacy.

B. V. Christensen, President,
American Association of College of Pharmacy
Ohio State University

The Editor's Page

Occasionally an amazing document comes to the Editor's desk. This time it came from the office of the National Association of Retail Druggists.

It may have had a wide distribution throughout the pharmaceutical press. If so, the Editor did not catch it. It consists of a set of four *whereases* and one *resolved*. A letter of transmittal is dated January 27, 1950 but the Editor did not receive it until near the end of February—but of course Tucson is a long way from Chicago. The letter says the resolution was adopted at the New York meeting of the N.A.R.D. on September 22, 1949. Not a rapid news service, and one with an inquisitive mind wonders if the druggists in convention assembled formulated the document, or whether it was left for someone to do it afterward. The resolution itself is undated. It would be interesting to know, perhaps someone will tell us, who were those persons that wrote the document, and just how much serious consideration was given to it by the druggists themselves. Also, what was the evidence upon which the decision was made.

The first *Whereas* reads, "The Pharmaceutical Survey showed among other things that our Colleges of Pharmacy were failing to use the facilities they possess to give maximum students benefits which could be had from overhauling or thoroughly revising present curricula."

Does The Pharmaceutical Survey make such a charge? It might be expected that some colleges were not measuring up to their possibilities, but the colleges as a whole can hardly be charged with not using their facilities to a high degree of efficiency.

The second *Whereas* reads, "It is the belief of this association that if this were done the four-year course could be made sufficiently comprehensive to prepare the student to perform the

professional duties required of him in the practice of pharmacy." This *Whereas* would indicate that whoever wrote it did not know the Committee on Curriculum of the American Association of Colleges of Pharmacy has through the whole period of The Survey been working with the Director and the Committees of The Survey toward this very end. The results of this study are recorded in the Committee's report on page 771 of the October, 1948 issue of the American Journal of Pharmaceutical Education. The Committee there tabulates the content of the Four-Year Curriculum, (Table I). It is essentially the curriculum which has become the standard now given in our colleges. But, it adds a second tabulation (Table II (A)) in which are given the courses which the Committee considers *necessary* to add to meet the needs of pharmaceutical practice today, and also a list (Table II (B)) which it considers *desirable* to add. The *necessary* list contains 12 additional courses and the *desirable* list contains 16. How the *necessary* list of courses is to be added to the four-year curriculum without the addition of time is beyond our comprehension.

The third and fourth *Whereases* are tied together and may be considered together, along with the *Resolution*. They read, "The Association being mindful of its responsibilities and obligations to the public to promote educational progress of the health profession, of which pharmacy is a component part, and *Whereas*, the rapid advances in pharmaceutical knowledge and discovery of new therapeutic agents require that pharmacists continue their studies of pharmaceutical subjects as long as they are in the practice of their profession: therefore, be it *Resolved* that the National Association of Retail Druggists in convention assembled strongly advocate a thorough study of present college curricula of four-year duration with the object of revising them to meet present needs and that this Association advocates the preparation and the making available of annual refresher courses, which will present the latest available information on pharmaceutical progress."

Exactly. We agree with the statement that the Association should be mindful of its responsibilities to the public, but it will

be very difficult to convince an intelligent public that a program which has been worked over and worked over for the last 18 years until it can't be worked any more would be satisfactory for the training in a modern health profession. Of course a pharmacist has to continue his studies throughout his lifetime, but if he is to teach himself intelligently so as to give the most efficient professional service, he has got to have a broader basic foundation training that is possible in a four-year course if when he graduates and his formal education is ended he is to be in a position to continue to be his own teacher and educate himself in the advances in his professional field. Our committees have done their best. They are composed of the most intelligent and experienced men in the field of pharmaceutical education and they have stated their needs of a broader program. That statement is not a matter of opinion—it is based on one of the most extensive studies that has ever been made of any professional field by the American Council on Education and directed by Edward C. Elliott, who is one of America's most distinguished students of the application of scientific methods to the study of the needs of professional education and practice; and that study has been supported by the American Foundation for Pharmaceutical Education to the extent of almost two hundred thousand dollars. Yet, in the face of that detailed study and its findings, and recommendations, there are those who are recommending the reverse of what The Survey indicates must be done if pharmacy is to become a "vanquishing" rather than a "vanishing" profession.

The Survey does recommend the establishment of refresher courses, and that is something that has been going on for a long time. The refresher courses which are operated for a few days at most can be of no great value except as a stimulus for self study for the few men who can attend them. What we need are extension courses which will direct the study of the practicing pharmacist to pursue the field in which he is interested. The time has come to quit talking in circles about pharmaceutical education. We start with the four-year course and end up with the four year course. In that there is no progress. The Pharmaceutical Survey is the only *extensive* scientific study that has ever

been made of the needs of pharmaceutical education and practice. This resolution and its preamble seems to be in contradiction of the findings, the recommendations and the spirit of The Survey. In the letter of transmittal accompanying the document, the Secretary of the N.A.R.D. states that, "This resolution expresses the *opinion* of our members." In these days procedures that are based upon *facts* have priority over those based upon opinions. Since the findings and recommendations of The Survey have been published, it seems these findings have been twisted to satisfy the selfish desires of some particular group. Whether this has been done deliberately or whether it has been done through ignorance is not for the writer to say, but it is more charitable to think the latter is the case.

This writer does not believe this document represents the attitude of the most thoughtful retail druggists of this country. He knows it does not do so for those who live in the western half of the United States, and that is a sizeable number. Neither does he believe it represents the attitude of some of the leading druggists in the N.A.R.D. He finds comfort in the fact that it was the distinguished present president of that organization, Mr. Frank Moudry, that almost a decade ago was the author of a resolution which was unanimously adopted at the annual meeting of District No. 5 at Aberdeen, South Dakota, which in substance read.—The time has come when pharmaceutical educators should give serious consideration to the requiring of prepharmacy training for entrance to the colleges of pharmacy. If the N.A.R.D. will adopt the principle established by that leader in pharmaceutical education, legislation, administration, and practice there will be no need to create the slogan, "The Menace of the N.A.R.D. to pharmacy."

Apropos of the concern of Grand Secretary Rand P. Hollenbeck of Phil Delta Chi over the increased use of alcoholics among college students and the play of fire arms, a concern we all share and on which we commented in the Editor's Page in the January issue, the Editor received a letter from one of his most beloved

friends who is dean of a college of pharmacy in one of our most outstanding universities which reads in part as follows:

"In spite of the fact that I have never quite been a total abstainer, as you know, I nevertheless agree with what you have said in the editorial in the January Journal.

"My humble opinion is that the encouragement of our youngsters from the sources and for the stuffs you mention, may suffice to some day lead this grand country of ours down the same path that the citizens of the Roman Empire chose.

"However, while we are talking about it we should not overlook the cigarette demon. For a number of years I have been deeply concerned with the ways in which our teenagers smoke cigarettes, beginning before breakfast and ending up on the pillow before they go to sleep at night. That this habit must leave in its wake tremendous deleterious health effects cannot be denied.

"These youngsters are being guided largely by the advertisements they see and hear about cigarettes. They know nothing about the poisonous character of tobacco. Those who are charged with the health of our student bodies are missing a great bit by not telling the students the true situation with respect to the toxicity and evil effects of tobacco. Again I say this, not being a total abstainer so far as tobacco is concerned, but I believe it firmly."

A few days later a second note came from my friend which read:

"Last evening I picked up the January issue of the Reader's Digest. There in the first article I saw completely written in excellent style what I had in mind when I mentioned the cigarette situation to you in a previous letter."

And while we are on this general subject it might be well to read "The Drinkers" (Time, January 16, 1950) which states that, "Alcoholism appears to be growing into a bigger and bigger U. S. health problem"; and further quotes Dr. Robert V. Seliger, chief psychiatrist of the Neuropsychiatric Institute of Baltimore as

writing in the current number of the Journal of Clinical Psychology, "This behavior illness . . . (alcoholism) causes ravages more and more varied than those of any other known medical or psychiatric sickness . . ." Certainly the time has come when this whole problem should be attacked by not only the spoken word but by personal conduct and example. After all the latter method is the more effective teaching.

A most gratifying report has come from the offices of the American Foundation for Pharmaceutical Education setting forth the accomplishment of that organization during the year 1949. It states that many of the recommendations of The Pharmaceutical Survey have been effected by the boards and the colleges of pharmacy. College curricula are being improved, courses in business administration are being added, boards of pharmacy examinations are being modernized and administrative authorities have promised stronger financial support to colleges of pharmacy as a result of the Foundation's work. Over 50 students have completed their graduate studies under Foundation fellowship awards and The Foundation is now supporting 120 graduate students who are working toward the doctorate.

It was a great day for pharmaceutical education when it became a concern of pharmaceutical industry and decided to contribute financial support to pharmaceutical education and research. What is just as important as financial support is the fact that it brought moral support also and attracted to the field of pharmaceutical education a large group of young men possessing superior abilities.

The author and subject index for volume XIII of the *Journal* which was mailed out with the January issue, like all preceding ones, was prepared with painstaking care by Prof. Zada M. Cooper, now of Villisca, Iowa. We are grateful to Miss Cooper

for her years of faithful service to the Association and appreciate her continued interest in our work.

"O, our God, we commend this nation to Thy merciful care, that being guided by Thy providence we may dwell secure in Thy peace. Grant to the President of the United States and to all in authority, the wisdom and strength to know and to do Thy will. Fill them with the love of truth and righteousness, and make them ever mindful of their calling to this people in Thy fear. Stretch forth Thine arm to strengthen and protect the armed forces of our country. Support them in the day of battle and in the day of peace. Keep them safe from all evil and endow them with courage and fortitude that in all things they may serve without reproach. We beseech Thee, and Thy gracious favor behold and bless our universities, colleges and schools, and the representatives here assembled, that knowledge may be increased among us and all good learning flourish. Grant that, in all humility, we may ever look unto Thee, who are the foundation of all wisdom, and do Thou direct us in all our doing, with Thy most gracious favor. Further us with Thy continued help, that in all our works begun, continued and ended, in Thee we may glorify Thy name. Finally by Thy mercy obtain everlasting life. Through Jesus Christ our Lord, Amen."

In these words did our inimitable, and beloved Dean Gordon L. Curry, with great sincerity and eloquence and dignity open the annual convention of the American Association of Colleges of Pharmacy for many years, and paved the way for many a fruitful meeting. On the twenty-first day of January, 1950 Dean Curry passed on. There will now be one vacant chair in the front row of seats in the convention chamber; but long we will remember at each opening session, that appeal for Divine guidance for which Dean Curry so eloquently plead. On March 29th the new collegiate library, to which he had willed his own private library, was dedicated as a memorial to him, so Dean Curry in more ways than one will continue to serve generations of students yet unborn.

—Rufus A. Lyman

Notes and News

The University of Arizona.—The college of pharmacy was inspected by Dr. E. C. Elliott in January and has been accredited by the American Council on Education as a 4-y institution.—During March the Alpha Nu Chapter of Phi Delta and Gamma Upsilon chapter of Kappa Psi were installed at the college. Phi Delta Chi was installed on March 11 by Emory Thurston of Los Angeles, past Grand President of the fraternity, and was assisted by 8 member of Omicron chapter of the University of Southern California. There were 23 charter members, two of whom were honorary. The honorary members were Dr. Robert L. Nugent, vice president of the University of Arizona, his field being colloidal chemistry, and Mr. Newell W. Stewart, secretary of the Arizona Board of Pharmacy and also of the Arizona Pharmaceutical Association, a past president of the National Association of Boards of Pharmacy, and present vice chairman of the House of Delegates of the American Pharmaceutical Association. He is a special lecturer in pharmaceutical jurisprudence in the college of pharmacy and is editor of the Arizona Pharmacist, the official publication of the Arizona Pharmaceutical Association.—The Kappa Psi chapter was installed on March 20 by Prof. Ray S. Kelley, Grand Secretary-Treasurer of Kappa Psi. Prof. Kelley is a member of the staff of Massachusetts College of Pharmacy. There are 40 charter members, 36 being undergraduates and 4 honorary. The honorary members are Mr. Roy Wayland and Mr. Beverly Burke, both past members of thte Arizona Board of Pharmacy end both of them operate professional pharmacies in the City of Phoenix, and Mr. Andrew Martin of Tucson past member of Arizona Board of Pharmacy and past president of the Arizona Pharmaceutical Association, and Mr. Charles Nielsen of the Martin Drug Company of Tucson, a member of the Arizona Board of Pharmacy and at present the president of the Arizona Pharmaceutical Association.

University of Buffalo.—Two pharmacy seniors were graduated at the midyear commencement.—On March 9, the members of the student branch were the guests of the administrative and pharmacy staffs of the new Veteran's Administration Hospital in the hospital's auditorium.—Mr. Monteith, chief pharmacist, spoke on "Opportunities for Pharmacy graduates in the Government Service" and Dean A. B. Lemon stressed the desirability of good relations between schools of pharmacy and the hospitals in their areas. Prof. Harold M. Beal and Dr. John W. Kleber have been elected first vice president and treasurer, respectively, of the Western New York Branch of the A.Ph.A.—Five

scholarships have been awarded to students during the second semester on the basis of scholarship.

Butler University.—Three students were graduated at the January commencement.—The college sponsored a refresher course for four successive Wednesday afternoons in February. Twelve topics were presented which were considered of interest to retail pharmacists. The attendance was very satisfactory, and it is planned to repeat the course in some form next year.—Construction of the new pharmacy building is progressing rapidly and is reported to be ahead of schedule. Final details for laboratory equipment have been completed.

University of Colorado.—Twenty-four students were graduated at the March commencement.—Dr. Harold C. Heim spoke before the class of dental technicians at the Denver Opportunity School recently. He has also been granted leave of absence for the spring quarter in order to take some post doctorate work in pharmacology at the University of Chicago.—Dean C. F. Poe has been appointed a member of a faculty senate committee to study the entire curriculum and plan of study for the new semestral system.—Construction is nearly completed on the new pharmacy-chemistry annex building which is a part of the $1,500,000 program for expanding the science laboratories.

Columbia University.—The university bookstore has established a branch in Men's Lounge at the college for sale of books, supplies, and the furnishing of cafeteria service for the convenience of pharmacy students.—Through the interest of Dr. Edward Plaut, the college will receive a substantial portion of the annual income from the Plaut-Falk Fund recently given the University.—The graduate course in manufacturing pharmacy now offered in the day session will also be given in the evenings during the next winter session.—Modern projection equipment for the lecture hall has been provided by Paul Elkowitz, '28.—Prof. A. Taub is a co-author of the recently issued text by Lippincott entitled, "Organic Chemistry in Pharmacy."—Mr. Tin Rin Chu of the pharmacy staff of West China University is pursuing study for the Master's degree as a Fellow of the American Foundation for Pharmaceutical Education.—The Bigelow Fellowship for graduate study will be available September, 1950.—The college has received notice of full accreditation by the American Council on Pharmaceutical Education.—The student branch has furnished cases in the main lobby for display of preparations prepared by students.—The dispensing laboratory has been equipped with 50 modern balances.

The University of Connecticut.—At the 7th annual mid-winter meeting of the Connecticut Pharmaceutical Association, Professor Nicho-

las Fenney spoke on the work and significance of the Connecticut Committee of Foods, Drugs, and Cosmetics and Dr. William T. Salter presented an illustrated lecture on Radio Active Isotopes and their use in medicine at a cultural meeting sponsored by Lambda Kappa Sigma Sorority.—Seven new members have been elected to Rho Chi.—The fourth annual post graduate course, sponsored jointly by the Connecticut Pharmaceutical Association and the school, was held on seven consecutive Monday evenings beginning in March. Drugs and the current problems of pharmacy were the subjects of the discussions by the members of the faculty and guest speakers.—Sixty-eight seniors visited the plants of Parke, Davis & Company and of Eli Lilly & Company in April as a part of the requirement of the course in dispensing.—Five scholarships were awarded to second semester students. Four of them were won by women students.—Several graduate assistanships are open for the academic year 1950-1951. The positions require approximately 15 hours per week as assistants in undergraduate courses. The remuneration is $1,200 for 9 months service. The remainder of the time is to be devoted to graduate work. Research fellowships are also available, paying $1,200 for 11 months, allowing full time for work towards the master's degree. For information, address The Dean, College of Pharmacy, 150 York Street, New Haven, Connecticut.

The Creighton University.—The clinic pharmacy has been remodeled recently. New prescription cases, shelving, benches, and fluorescent lighting have been installed and asphalt tile flooring has been laid.—During a recent inspection of the school by Dr. E. C. Elliott and Secretary P. H. Costello, the student body was addressed by Dr. Elliott.—The curriculum has been revised recently and is now in effect.

University of Florida.—Charles S. Haupt has assumed the duties as associate director of the Bureau of Professional Relations, replacing L. W. Harrell, resigned.—Dean P. A. Foote has been elected national president of Rho Cho for the period 1950-1952. He will be installed at the May meeting.—Dr. Otis Merriam Cope, interim professor of pharmacognosy and pharmacology died on January 28th. Interment was at Montclair, New Jersey. Before coming to Florida in 1948 he taught for many years at the Universities of Michigan and Nebraska and at New York Medical College.—Dr. Werner M. Lauter has been appointed professor of pharmaceutical chemistry. He holds the doctorate from the University of Greifswald, Germany, where he was an instructor in organic chemistry. For the past twenty-five years he has held research positions in large American manufacturing establishments and comes to Florida from Hoffman-LaRoche where he has been chief chemist in charge of pharmaceutical research since 1942.

University of Georgia.—An estimated $8,000,000 in new appropriations for the University System of Georgia is before the House of Representatives, a request of the House University System Subcommittee. The request specifically asks for funds for the construction of a pharmacy building on the University of Georgia campus.

University of Illinois.—Hoffman-LaRoche, Inc., have awarded a grant of $1,830 to the department of pharmacology for the study of the effect of a new analgesic drug on kidney function with particular reference to the excretion of water; and E. R. Squibb & Sons have established a fund of $4,833.33 to continue the support of an investigation of striated muscle relaxants.—David D. Stiles, associate director of sales at the Abbott Laboratories has been appointed as a member of the Advisory Committee of the college of pharmacy.—Rearrangement of space in the department of pharmacology has provided private office space for members of the staff and room for a number of additional laboratory tables for graduate students.

The State University of Iowa.—The average grade point of pharmacy students for the first semester of 1949-1950 hit an all time high of 2.35. Of the 196 students registered last September, 1 attained a grade average of less than 1.0, 44 had an average between 1.0 and 1.99, 104 between 2.0 and 2.99, 42 between 3.0 and 3.99, and 2 earned a 4.0, which is a perfect grade. Three of the 196 withdrew from the school before the close of the semester. The rise in the grade point average may be attributed to the care with which students are selected from the applicants plus a stronger emphasis on good teaching.

University of Kansas.—Luther A. R. Hall has been awarded the 1950 grant by the Research Corporation, a nonprofit organization in New York City, effective after he has completed the work for the doctorate the coming summer. His problem will be to synthesize compounds with possible cortisone type activity.—Verlin C. Stephens has received a grant from Parke, Davis & Company. His research problem will be in the field of synthetic pharmaceutical agents. These two postdoctoral grants total $8,300 and bring the total of grants to the school of pharmacy for 1950 to $19,500.—William H. Edgerton received the doctorate in February and has accepted a position in the research department of Parke, Davis & Company. He held the company's fellowship in pharmaceutical chemistry for the past two years.

University of Minnesota.—Dean Charles H. Rogers attended a meeting of the nominating committee for the U.S.P. Revision Committee in New York in January.—The prescription compounding laboratory has been completely equipped with Torsion prescription balances

of the latest type.—Eighty-five pharmacists from Minnesota and the adjacent states attended the thirteenth continuation study course for pharmacists held at the Center for Continuation Study, February 27th to March 1st. Guest lecturers were Dr. Louis Busse of the University of Wisconsin, Dr. George DeKay of Purdue, and Dean Floyd J. LeBlanc of South Dakota State College. Dr. Robert P. Fischelis gave the Melendy Memorial Lecture following the final dinner. He also addressed the student body and the Northwestern Branch of the A.Ph.A. while in the city.

University of Nebraska.—Dr. Harald G. O. Holck has been given a grant of $500 by the Chicago Committee on Alcoholism for studies on the drug antabuse.—New faculty members recently appointed are Hugh D. Bryan, James E. Dusenberry and Dr. P. Brolsma.—The Gene Gilmour A.Ph.A. Membership Fund has been established as a loan fund for the purpose of defraying the dues of the student branch.—A graduate student in the department of agricultural engineering has been assigned the project of developing plans for a new pharmacy building which is scheduled for erection in 1952-43.—Scholarship funds totaling $920, have been provided by the American Foundation for Pharmaceutical Education, the Lincoln Drug Company, and the Smith-Dorsey Company, for undergraduates.—The pharmaceutical dispensary has been completely remodeled.—Seven undergraduates and one faculty member, Dr. F. S. Bukey, have been elected to Rho Chi.—Dean and Mrs. J. B. Burt attended a recent meeting of the Midwestern Conference of Pharmaceutical Associations in Kansas City.—The total enrollment for the second semester totals 199 undergraduates and 22 graduate students.

University of New Mexico.—The college of pharmacy has been recently reinspected by the American Council of Pharmaceutical Education and has been granted Class A rating.—The work in pharmacy was established at New Mexico in 1945 in temporary quarters and borrowed facilities in and from other departments. It is now in its own new building, fully equipped and staffed with a current enrollment of 132 students. Twenty-five seniors will be graduated in June..

University of North Carolina.—In competition for the prize offered by the student branch of the North Carolina Pharmaceutical Association the following programs were presented: Phi Delta Chi, "Prescription for Life" (the history of pharmacy in North Carolina); Kappa Psi, "Pharmacy's Problems"; and Kappa Epsilon, "Pharmacy's Answers."—At the annual meeting of the board of directors of the North Carolina Pharmaceutical Research Foundation a budget of $12,000 was approved for the school year 1950-51, including four new fellowship from Sterling Drug, Inc.—Five students were initiated into the

Xi Chapter of Rho Chi. For the Fall quarter, 47 students made the dean's list for superior scholarship.—Dr. H. O. Thompson and Mr. Rex Paramore have nearly completed a comprehensive display of ethical specialties.—Dr. E. A. Brecht addressed the Alamance County Nurses' Association on "New Drugs and Their Uses."—Dr. Hartung discussed "The Odors of Diarylalkanes" for the Elisha Mitchell Scientific Society.—Teaching assistantships and research fellowships ranging from $1,000 and tuition upward are now available. For information address the Dean of the Graduate School or the Dean of the College of Pharmacy, University of North Carolina, Chapel Hill.

Ohio State University.—Dean B. V. Christensen was honored at a banquet on February 15th for having given distinguished service in his professional field. The award was made by the Professional Inter-Fraternity Council at the University, made up of 12 professional groups on the campus. The award, a recognition certificate, was presented to Dean Christensen by Rho Pi Phi, professional pharmaceutical fraternity.

Philadelphia College of Pharmacy & Science.—Thirty-five students are enrolled for graduate work for the current year. Twenty-one of these are alumni of this school; fourteen are from other schoo's; two are women. Twenty-two are majoring in pharmacy, eight in biology, and five in bacteriology.—For the first time since war forced the discontinuance of graduate work, studies leading to the degree of Doctor of Science in Pharmacy will be offered beginning in September 1950. This is made possible through the expansion of the various laboratories, and additional equipment and staff members. Among new staff members are Drs. Julian and Clara Ambrus, recently of the Pasteur Institute in Paris.

University of Pittsburgh.—Open house was held on February 1. All the laboratories were open and in full operation. The public showed great interest in the equipment and the technics used in the education of the pharmacist.—Dr. Julius A. Koch, dean emeritus of the school of Pharmacy will attend the 1950 U.S.P. convention as a delegate. This will be he seventh consecutive decennial U.S.P. convention at which he has served in this capacity. Dean Reif and Prof. Wurduck will also attend as delegates and Dr. Claus, Bianculli, and Wilson as alternates.

Purdue University.—Dean Glenn L. Jenkins spoke to the 5560th Research & Development Training Group on January 18th on the subject, "Pharmacy and National Defense." Dean Jenkins has also recently addressed the district meetings of the American Pharmaceu-

tical Association in Chicago and in St. Paul.—Nineteen seniors were graduated at the February commencement; six were awarded the master's and six were granted the doctorate.

University of Southern California.—Prof. Edward S. Brady presented a paper on "The Newer Anti-Histamines" before the Santa Clara County Pharmaceutical Association meeting.—Two new courses are being given for the first time as evening extension classes in University College. They are "Hospital Pharmacy" by Charles Towne, who is the pharmacist in charge of the Veteran's Hospital in Los Angeles, and "Manufacturing Pharmacy" by Taylor McCain, who is also a member of the Veteran's Hospital staff.

Medical College of the State of South Carolina.—Two students have been elected to Rho Chi; two to Omega chapter of Lambda Kappa Sigma; nine to Phi Delta Chi; and eleven to Kappa Psi.—The student publication, the Cosmian, which is issued annually by the schools of pharmacy and nursing, is now in press. This is the only student publication of the Medical College. Dr. W. A. Prout represented the school at the meeting of District No. 3 in March.

Southern College of Pharmacy, Inc.—The faculty and students joined in force to defeat a bill introduced in the Georgia legislature which was designed to lower the requirements for licensure in Georgia. —The students held open house early in April as a part of the program celebrating the Diamond Jubilee of the Georgia Pharmaceutical Association.

Temple University.—Dean H. Evert Kendig was awarded the Distinguished Service Award by the General Alumni Association of the University, the presentation being made at the annual Founder's Day Dinner on February 16th.—Dr. Alfred E. Livingston, formerly research professor of pharmacology, has been appointed professor of pharmacology in the school of pharmacy.—Dr. Frank H. Eby was recently honored at a testimonial dinner on the occasion of his being elected Grand Regent of the Kappa Psi fraternity.—Two recent interprofessional programs featured lectures by members of the faculty of the school of medicine.

University of Tennessee.—Drs. Albert Musick and Karl Goldner attended the Animal Health Convention in St. Louis in March.—Dean Crowe attended the annual meeting of District No. 3 in Atlanta recently.—Phi Delta Chi initiated 35 new members and Kappa Psi 9, in February.

University of Texas.—Religious Emphasis Period was observed on the campus from February 13-24. Prof C. C. Albers of the pharmacy faculty spoke to three different sororities on religious topics at dinner meetings. During this period also, Dr. Louis Evans, famous Presbyterian pastor from Hollywood, California addressed classes in pharmacognosy.—Dean Burlage and Drs. C. O. Wilson and C. C. Albers have been named as delegates to the U.S.P. convention.—Forty-two students were graduated at the end of the first semester. Since there are no formal graduation exercises for the January graduates, President T. S. Painter honored the pharmacy graduates and their wives, the faculty and their wives and members of the State Board of Pharmacy at an informal reception at his home.—Dr. W. H. Ferguson who has spent considerable time in Ecuador where he has gained considerable information concerning the medicinal plants and remedies of the Jivaro Indians was a campus visitor recently. He spent 3 months on the campus in 1948 in the interest of developing a research program involving certain drugs from the South American jungles.—Mr. Donald Clark of Cornell Medical School addressed the faculty and graduate students in February on the subject of modern approaches toward arriving at doses of drugs.

Medical College of Virginia.—Dr. John Boenigk who received the doctorate from Purdue will join the staff of the school of pharmacy in September.

University of Wisconsin—A new research tool to help pharmaceutical and organic chemists to learn the chemical structure of drugs or other unknown compounds that occur in nature has been unearthed by researchers at the University. The new type of analysis promises to have a rather wide range of usefulness in trying to learn how certain natural drug compounds might be duplicated in the laboratory or used more effectively in pharmacy. This type of analysis involves the use ate level have been planned on the synthesis and general reactions of of lithium aluminum hydride in reactions having an endpoint that can be detected either electrically or by color.—New courses on the graduorganic compounds containing sulfur, particularly medicinal chemicals and one devoted to advanced study and laboratory work on basic analytical methods of drug assay, with emphasis on critical evaluation and consideration of official and less commonly used methods. Other courses are being offered open to advanced undergraduate students on an elective basis. In the course on control, emphasis will be placed on sampling, development of control systems, statistical methods, labeling procedures, and new drug applications in terms of the federal food, drug and cosmetic act. A course on drug standards will explore the background and interpretation of specific and general methods and

explain the establishment of certain tolerances in official monographs. Still another course concerns medicinal compounds still under development and will give special attention to research aims, directions, and methods.

University of Wyoming.—Leo Fogelman, a sophomore pharmacy student, is a member of the University Theatre Group and was highly commended for his work in a recent presentation of the tragedy, "Medea".—A considerable amount of equipment has been acquired for the department of pharmacology.—Under a newly revised Constitution for the Associated Students of the University, the college of pharmacy will have a representative in the Student Senate.

The Twenty-sixth Annual Plant Science Seminar was held at Madison, Wisconsin, on August 21 to 27, 1949. It was attended by eighty-eight persons representing twenty-three colleges of pharmacy. In addition, a number of representatives of manufacturing establishments and research laboratories were in attendance.

Those in attendance report one of the most valuable programs in the history of the Seminar. Dr. Edward C. Elliott, Director of The Pharmaceutical Survey, was a contributor to the program. He commented upon the status of pharmacognosy in the pharmaceutical curriculum.

New officers elected for the current year are Elmer L. Hammond, chairman; Heber W. W. Youngken, Jr., 1st vice chairman; Paul D. Carpenter, 2nd vice chairman; Edward P. Claus, secretary; J. Allen Reese, J. Hampton Hoch, Chairman Hammond and Secretary Claus, members of the executive committee.

Since the complete report of the meeting is printed in The Journal of the American Pharmaceutical Association, this brief statement is made here to complete the record of events.—Ed.

Miscellaneous Items of Interest

A MEMORIAL

GORDON LATEN CURRY

Naional Pharmacy Figure Dies in Louisville

Dr. Gordon L. Curry, Dean Emeritus at the University of Kentucky College of Pharmacy, succumbed of a heart ailment Saturday night, January 21, 1950, at St. Anthony's Hospital. Ill for several months, Dr. Curry had remained active until a few weeks ago.

Widely known throughout the nation in pharmaceutical and educational fields, Dr. Curry's passing will be mourned by hundreds of pharmacists trained under his supervision. He served his apprenticeship in the drug store of Dr. Jacob A. Flexner, one of the celebrated Flexner brothers.

After his graduation from college, Dr. Curry served as assistant instructor in pharmacy at the Louisville College of Pharmacy under the late Professor C. Lewis Diehl, one of the founders of the school and its first president. From 1904 to June 1946, he was professor in chemistry and director of the chemistry laboratories. Dr. Curry became the first Dean of the College in 1894 during the 24th session of the school. He served in this capacity until 1917, was reappointed in 1925, and served until he became Dean Emeritus and Director of Research in 1946. The Louisville College of Pharmacy conferred the honorary degree of Doctor of Pharmacy on him in June 1922.

Beside the study of pharmacy, Dr. Curry had studied botany under the famed Asa Gray at Harvard and was a disciple of the late organic chemist, Samuel P. Sadtler of Philadelphia. He was widely known as an entomologist and as a geologist.

A member of Kappa Psi Pharmaceutical fraternity, he was also a fellow of the American Association for the Advancement of Science and held active membership in the American Pharmaceutical Association, the National Geographic Society, the American Museum of Natural History, the American Speleological Society, the Sons of the American Revolution, the Veterans Drug Club, the National Association of Retail Druggists, the Kentucky State Pharmaceutical Association and the Louisville Retail Drug Association. He held offices in the American

Association of Colleges of Pharmacy and took part in the decennial revisions of the **United States Pharmacopeia and the National Formulary.**

Survivors include his son, Gordon Crowell Curry of Bronxville, New York, two grandchildren, Miss Barbara A. Curry of Bronxville, and Mrs. H. H. Smith of Kalamazoo, Michigan, and one great-grandchild, Stephen Curry Smith of Kalamazoo.

—Earl P. Slone

The American Association of Colleges of Pharmacy

FIFTY-FIRST ANNUAL MEETING

President, B. V. Christensen; Vice-President, Thomas D. Rowe; President-Elect Hugo H. Schaefer; Secretary-Treasurer, Louis C. Zopf; Chairman of the Executive Committee, Joseph B. Burt.

Saturday, April 29
Room
Traymore Hotel

10:00 A.M. Meeting of the Executive Committee.
2:00 P.M. Meeting of the Executive Committee.

Sunday, April 30
Room
Traymore Hotel

9:30 A.M. Meeting of the Executive Committee.

FIRST SESSION

Sunday, April 30, 2:00 P.M.
Room
Traymore Hotel

1. Roll Call.
2. Appointment of Committee on Resolutions.
3. Appointment of Nominating Committee.

4. Appointment of Auditing Committee.
5. Address of the President, B. V. Christensen.
6. Report of the Secretary-Treasurer, Louis C. Zopf.
7. Report of the Executive Committee, Joseph B. Burt.
8. Report (Abstracts) of Standing Committees.
   (a) Committee on Relation of Boards and Colleges, Hugo H. Schaefer, General Chairman.
   (b) Committee on Libraries, George Urdang.
   (c) Committee on Activities for Alumni, Linwood F. Tice.
   (d) Committee on Problems and Plans, Rufus A. Lyman.
   (e) Committee on Status of Pharmacists in Government Service, Charles H. Rogers.
   (f) Committee on Educational and Membership Standards, Arthur E. James.
   (g) Committee on Pharmaceutical Research, William J. Husa.
   (h) Committee on Graduate Study, Earl P. Guth.
   (i) Committee on Curriculum, George L. Webster.

Sunday, April 30, 8:00 P.M.
Room
Traymore Hotel

Open Forum on th eProfessional Preparation of Pharmacists George L. Webster, Moderator.

NOTE: This meeting is open to everyone.

Monday, May 1, 9:00 A.M.

Conference of Teachers of Pharmacy.
Room
Conference of Teachers of Pharmaceutical Economics.
Room
Conference of Teachers of Chemistry.
Room
Conference of Teachers of Biological Sciences.
Room

NOTE: For individual Conference programs see pages following Third Session.

SECOND SESSION

Monday, May 1, 2:00 P.M.
Room
Traymore Hotel

1. Report of the Credentials Committee.
2. Recommendations from Teachers' Conferences.
3. Address of the President-Elect, Hugo H. Schaefer.
4. "The Good Teacher", Milton O. Pella.

5. "Uniform Pre-Professional Curriculum", William S. Guthrie.
6. "Where Will They Find Jobs", Robert P. Fischelis.
7. "The Principles of Pharmaceutical Education", C. H. Hampshire.
8. Report of the Editor of the American Journal of Pharmaceutical Education, R. A. Lyman.

Monday, May 1, 6:30 P.M.
Room
Traymore Hotel

Joint dinner with National Association of Boards of Pharmacy.
Address of Welcome, Provost Mason W. Gross, Rutgers, University.
Lecture, "Pharmacy in Japan" (illustrated) by Royce Franzoni.

Tuesday, May 2, 9:00 A.M.
Room
Traymore Hotel

Model Constitution and By-Laws for the Teachers' Conferences, H. G. Hewitt.

Conference of Teachers for Graduate Instruction.

Chairman, Lloyd E. Harris; Vice-Chairman, Donald C. Brodie; Secretary, H. W. Youngken, Jr.; Representative on the Committee of Conference of Teachers, G. P. Hager.

1. Call to order, Chairman Dr. Lloyd E. Harris.
2. "The Significance of Graduate Study and Graduate Degrees" by Dr. Walter C. Russell, Dean, Graduate Faculty, Rutgers University.
2. "The Six Year Program in Pharmacy and Graduate Instruction Leading to the Ph.D. Degree" by Dr. Troy C. Daniels, Dean, College of Pharmacy, University of California.
4. Report of the Chairman for the Committee on Accreditation of Graduate Instruction by Dr. Edward A. Brecht, School of Pharmacy, University of North Carolina.

THIRD (FINAL) SESSION

Tuesday, May 2, 2:00 P.M.
Traymore Hotel, Room

1. Report of the American Council on Pharmaceutical Education, P. H. Costello.
2. Report (Abstracts) of Special Committees:
   (a) Committee on Predictive and Achievement Tests, E. L. Cataline.
   (b) Committee on Professional Relations, P. A. Foote.
   (c) Committee on Personnel Problems, J. Allen Reese.
   (d) Committee on Emergency Problems, H. Evert Kendig.
   (e) Committee on Teachers Conferences, H. G. Hewitt.

(f) Committee on World Congress for Pharmaceutical Education, George Urdang.
(g) Committee on Audio-Visual Education, Donald C. Brodie.
(h) Committee on Constitution and By-Laws, Hugo H. Schaefer.
(i) Committee on Functions of the American Association of Colleges of Pharmacy, Arthur H. Uhl.
(j) Committee on Office of Permanent Secretary of A.A.C.P., Arthur H. Uhl.

3. Reports of Special Representatives:
   (a) Delegate to the American Council on Education, B. V. Christensen.
   (b) Representatives to the American Council on Pharmaceutical Education, B. V. Christensen.
   (c) Representatives to the National Drug Trade Conference, Ernest Little.
   (d) Delegates to the House of Delegates of the American Pharmaceutical Association, J. Lester Hayman.
   (e) Representatives to the National Wholesale Druggists Association, Earl R. Serles.
   (f) Directors of the American Foundation for Pharmaceutical Education, H. Everet Kendig.
4. Unfinished Business.
5. Reports of Committee on Resolutions.
6. Report of Auditing Committee.
7. Miscellaneous Business.
8. Election of Officers.
9. New Business.
10. Executive Session.
11. Adjournment.

PROGRAMS OF TEACHERS CONFERENCE

TEACHERS OF PHARMACY

Chairman, Joseph B. Sprowls; Vice-Chairman, Donald C. Brodie; Secretary, C. Lee Huyck; Representative on the Committee of Conference of Teachers, A. I. White.

1. Call to Order.
2. Chairman's Address, Joseph B. Sprowls.
3. Secretary's Report, C. L. Huyck.
4. Appointment of Committees.

5. The New Curriculum for Pharmacy.
   (a) "Physical Pharmacy—The Nature of and Need for the Course", Louis W. Busse.
   (b) Comments on Dr. Busse's Paper, LeRoy Keagle.
   (c) "General Pharmacy in the Pharmacy Curriculum", Stephen Wilson.
   (d) Comments on Dr. Wilson's Paper, Joseph E. Burt.
   (e) "Undergraduate Research as an Effective Teaching Method", Donald C. Brodie.
6. Report of the Committees.
7. Election of Officers.
8. Adjournment.

TEACHERS OF PHARMACEUTICAL ECONOMICS

Chairman, C. I. Cooper; Vice-Chairman, Arthur P. Wyss; Secretary, Lawrence D. Lockie; Representative on the Committee of Conference of Teachers, Stephen Wilson.

PANEL DISCUSSION: "Ways and Means of Implementing the Survey Recommendation pertaining to Pharmacy Administration in the Pharmacy Curriculum"
Dean John F. McCloskey
Dean Thomas D. Rowe
Dean Charles W. Bliven
Dean Francis J. O'Brien
Dr. Stepen Wilson
Mr. Paul C. Olson

Election of Officers.
Adjournment.

TEACHERS OF CHEMISTRY

Chairman, Abraham Taub; Vice-Chairman, G. P. Hager; Secretary, Ray S. Kelley; Representative on the Committee of Conference of Teachers, H. G. Hewitt.

1. Call to Order.
2. Report of tthe Chairman, Abraham Taub.
3. Appointment of Nominating Committee.
4. "New and Modified Experiments in General Chemistry", Clarence A. Discher.

5. Symposium: "Organic Medicinal Products: What Should Be the Proper Balance and/or Correlation Between the Chemistry and the Pharmacology", Fred Semeniuk and Walter H. Hartung.
   E. E. Lauallen.
   (All teachers of Chemistry and Pharmacology are invited to participate in the discussion of this topic.)
6. Unfinished Business.
7. New Business.
8. Report of the Nominating Committee.
9. Installation of New Officers.
10. Adjournment.

TEACHERS OF THE BIOLOGICAL SCIENCES

Chairman, Curtis H. Waldon; Vice-Chairman, Edward P. Claus; Secretary, Heber W. Youngken, Jr.; Representative on the Committee of Conference of Teachers, Arthur E. Schwarting.

1. A Course in Economic Biology for Pharmacy Students, Dr. Maynard W. Quimby, Massachusetts College of Pharmacy.
2. The Place for Teaching Antibiotics in the Pharmaceutical Curriculum, Dr. Robertson Pratt, College of Pharmacy, University of California.
3. A Pharmacological Demonstration of the Action of Agents Used for the Control of Auricular Flutter, Drs. James M. Dille and Alfred Farah, School of Medicine, University of Washington.
4. Mathematics of U.S.P. XIV Bioassays, Dr. James C. Munch, College of Pharmacy, Temple University.
5. A Student Experiment on Blood Flow, Dr. Raymond P. Ahlquist, Medical College of Georgia.
6. Election of Officers.
7. Adjournment.

EXHIBIT

AUDIO-VISUAL MATERIALS

(Hotel Madison)

A display of audio-visual teaching aids is available (no charge) at the Hotel Madison, Room ..... Projectors, screens, slides, recorders,

etc., will be available for demonstration. The display will not be open during the scheduled sessions of the A.A.C.P. Members of the Association are invited to show their own teaching aids. This display has been made possible through the courtesy of the Extension division of Rutgers University and the Committee of Audio-Visual Education.

The 1950 Seminar in Pharmaceutical Administration

The American Foundation for Pharmaceutical Education has again appropriated funds to the American Association of Colleges of Pharmacy with which to finance a Seminar—this time a Seminar in Pharmaceutical Administration—to be held at The Ohio State University, Columbus, Ohio, during the period June 19th to June 30th, inclusive, 1950.

Rooms: $2.00 per person, daily rate, in double room, or weekly rate of $10.00 per person in Mack Hall. Mack Hall is on the edge of the campus and within easy walking distance of the Pharmacy Building and Social Administration Auditorium. Room rates include bedding, towels, soap, and limited maid service. Meals are available at cafeterias and restaurants at reasonable rates.

The program is now in progress of preparation, and it is proposed to include instruction covering such topics as: Drug Store Accounting; Principles of Economics, as applied to the Practice of Pharmacy; Educational Principles and Teaching Techniques; Pharmacy Laws, Various Phases of Marketing Drug Products; Merchandising Problems; Drug Store Location and Layout.

It is also proposed that each speaker will prepare a synopsis of his topic to be mimeographed and available to registrants. Hence, it is the hope that those registered will be able to take home enough material to serve as bases for courses in Pharmacy Administration to be offered as a part of the curricula of the respective colleges.

It is urged, therefore, that Deans call this Seminar to the attention of the faculty members and help to encourage them to attend this Seminar.

Additional information will be distributed to all colleges as it becomes available.

THE TENTATIVE PROGRAM

Monday, June 19th

9:00 A.M.	Announcements—Dr. B. V. Christensen, Chairman
9:15	Principles of Economies as Applied to the Practice of Pharmacy—Dr. J. H. Goodness
10:00	Accounting Problems of the Retail Drug Store—W. E. Dickerson
11:00	Management of Retail Pharmacies—Dr. Stephen Wilson
12:00	Lunch
1:00 P.M.	Educational Principles and Teaching Techniques—C. B. Mendenhall
2:00	Marketing Drug Products—Manufacturers' Problems—Dr. H. C. Nolen
3:00	Accounting Laboratory—W. E. Dickerson

Tuesday, June 20th

9:00 A.M.	Principles of Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	Educational Principles and Teaching Techniques, continued—C. B. Mendenhall
2:00	Marketing Drug Products, continued—Nolen
3:00	Accounting Laboratory, continued—Dickerson

Wednesday, June 21

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	Educational Principles and Teaching Techniques, continued—C. B. Mendenhall
2:00	Marketing Drug Products, continued—Nolen
3:00	Accounting Laboratory, continued—Dickerson

Thursday, June 22

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson

11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	The Use of the Model Pharmacy as a Laboratory for Drug Store Merchandising and Sales Promotion—Seymour B. Jeffries
2:00	Marketing Drug Products, continued—Nolen
3:00	Accounting Laboratory, continued—Dickerson

Friday, June 23

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	The Use of the Model Pharmacy, continued—Jeffries
2:00	Marketing Drug Products, concluded—Nolen
3:00	Accounting Laboratory, continued—Dickerson

SECOND WEEK

Monday, June 26

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	Does the Pharmacy Student Need Business Training—E. L. Newcomb
2:00	Pharmacy Laws—Federal—H. H. Schaefer
3:00	Merchandising Problems—H. W. Adkins

Tuesday, June 27

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	Drug Store Personnel—T. G. Crawford
2:00	Pharmacy Laws, continued—Schaefer
3:00	Merchandising—J. Peckham

Wednesday, June 28

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson

12:00	Lunch
1:00	Drug Store Personnel, continued—Crawford
2:00	Pharmacy Laws, continued—Schaefer
3:00	Drug Store Merchandising and Advertising—T. J. Matousek

Thursday, June 29

9:00 A.M.	Pharmaceutical Economies, continued—Goodness
10:00	Accounting Problems, continued—Dickerson
11:00	Management of Retail Pharmacies, continued—Wilson
12:00	Lunch
1:00 P.M.	The Prescription Department—B. J. Mull
2:00	Pharmacy Laws, continued—Schaefer
3:00	Drug Store Advertising—Dr. Ralph Clark

Friday, June 30

9:00 A.M.	Pharmaceutical Economies, concluded—Goodness
10:00	Accounting Problems, concluded—Dickerson
11:00	Management of Retail Pharmacies, concluded—Wilson
12:00	Lunch
1:00 P.M.	The Prescription Department, concluded—B. J. Mull
2:00	Pharmacy Laws, concluded—Schaefer
3:00	Reviews of the Seminar—B. V. Christensen, J. H. Goodness, and Stephen B. Wilson

A.A.C.P. Committee on Seminar:
B. V. Christensen, Chairman

Physical Pharmacy*

L. W. BUSSE, Ph. D.

University of Wisconsin

The term "physical pharmacy" by definition and by intent is meant to embrace a "study of the application of physical and chemical prin-

*Abstract of material presented at the Pharmacy Teachers Seminar, Madison Wisconsin June 1950.

ciples or laws to the preparation of modes of administration (pharmacy) and as an aid in explaining the manner by which the mode of administration (vehicle) influences the rate or degrees of activity of the drug." This might be more simply stated as "the application of physical-chemical laws and principles to pharmaceutical systems."

I think that we should consider the term "physical pharmacy" as one indicating a revised or revamped course rather than a new course. It is our opinion that in revising and rearranging the material covered under the heading Fundamental Principles and Processes we will be deriving the full benefits from this essential material. We believe that in doing this we will really accomplish what is intended to be accomplished in our beginning "pharmaceutical technique" courses.

The Sub-Committee on Pharmacy of the Survey and the A.A.C.P. Curriculum Committee have been severely criticized for the deletion of this material in its recommendations to date. The Sub-Committee on Pharmacy did make a careful analysis of the material incorporated under the heading of "Pharmaceutical Techniques" and "Fundamental Principles and Processes of Pharmacy" and came to the conclusion that much of the material and experiments were covered or carried out in basic science courses and properly so. The Committee assumed then that necessary applications of these principles would be integrated in the pharmacy, pharmacognosy, and pharmaceutical chemistry courses of the 4 year curriculum.

One must keep in mind when considering the Survey report that the report was intended to represent the basic minimum of pharmacy credits necessary to train a pharmacist to practice his profession competently. The Committee, when it wrote the report, felt that some people would feel it necessary to require more credits and felt that is their prerogative. (Other areas of the field will be responsible for applied courses also.)

The A.A.C.P. Curriculum Committee, which had the benefit of the complete Survey material, recommended a 6 year program for pharmacy and did not include this beginning course in the curriculum it presented for discussion purposes. It did, however, and this point has been overlooked by many people, recommend mathematics through one semester of calculus, a semester of physical chemistry and a course which we like to think of as "physical pharmacy." (Also in pharmaceutical chemistry report as "colloid.")

Now the point that I've been trying to lead up to is this—that much of the material which Dr. Burt, in his paper this morning, con-

sidered so essential and feels has been neglected in the Survey report was intended to be integrated in the courses of the 4 year curriculum. The A.A.C.P. Curriculum Committee went beyond his request and considered this material so essential that it recommends a course in physical chemistry as a prerequisite for it.

Actually, we are in agreement as to the essentiality of the material but we differ as to the level at which the material should be directed or given. It is our opinion that the material which has been treated under fundamental principles and processes should be based upon an adequate foundation in physics, mathematics, chemistry and physical chemistry and that after this the application to pharmacy can be made on a quantitative basis rather than a qualitative descriptive basis as it has been in the past. This is no criticism of the authors of textbooks or teachers of this material at the present time. Rather it is a criticism of a **"curriculum"** and those responsible for it, which insists that this essential material be presented so early in the curriculum that the background of the student permits only this type of presentation. At the sophomore level this material cannot be presented in a quantitative manner and as a result the student is not able to apply any of this material quantitatively to a problem he encounters in his later pharmacy courses. As a result these courses are almost of necessity tending to be descriptive in nature also.

The objective of this course is to present this essential fundamental material to the student in such a way and at such a time as he can absorb it and use it as a working tool in solving the problems he encounters in the preparation of modes of administration in a quantitative scientific manner.

It is our opinion that the preparation of modes of administration has developed to such a degree that the training necessary to solve the problems encountered, requires the application of the basic laws and principles at an extremely high level. This means then that the time of discussing whether or not we have to teach the fundamental sciences before we try to have them applied to the preparation of modes of administration is over. The present degree of knowledge simply forces us to definitely examine **how much** training in the basic courses is necessary for the modern graduates in pharmacy.

Actually, what Dr. Goyan, Dr. Higuchi and I are proposing is that the essential material normally covered in the beginning technique courses be given at a later time in the curriculum in math., physics, chemistry, and physical chemistry.

Dr. Goyan will bring out the manner in which the properties of solution would be portrayed and Dr. Higuchi the basis for a discussion of the group colloids, suspensions and emulsions.

MINUTES OF THE MEETING OF THE BOARD OF DIRECTORS

of the

AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION

New York City, January 26, 1950

(an abstract)

1. The Secretary, Dr. E. L. Newcomb, reported that the Board of Grants had utilized $96,484.74 for domestic Fellows for stipends, out of $100,000 provided by the Board of Directors at a meeting in April, 1949, and that an additional sum of approximately $20,000 would be required by the Board of Grants to carry current fellowship students through to the end of the Foundation year, April 3, 1950. After brief discussion, this sum was allowed by unanimous vote of the Directors.

2. The Secretary reported that the Board of Grants had continued to support existing Foundation Fellows who were foreign students as authorized by the Directors. A total of $18,543.22 had been required to carry the foreign Fellows along to date and an additional $10,000 was granted by unanimous vote to enable the Board of Grants to carry these Fellows until the next meeting of the Directors on April 3, 1950.

3. The Board of Directors considered a request to grant funds to be used in defraying the expense of a pharmacy administration seminar to be held at Ohio State University at Columbus, June 13 to 30, 1950. It was voted unanimously that a sum of $6,000 be allowed for this purpose.

4. The Secretary presented a report from Secretary Zopf of the A.A.C.P. covering the receipts and expenditures in connection with the pharmacy seminar held at the University of Wisconsin during

the summer of 1949. The report showed that of the $6,000 provided by the Foundation to cover the expense connected therewith, $1,298.26 remained at the close of the seminar and addresses, in so far as possible, that were delivered at the seminar in the **American Journal of Pharmaceutical Education.** The report was received as satisfactory.

5. The Board discussed at some length the financial support of the **American Journal of Pharmaceutical Education** for the year 1950. Emphasis was placed upon the present mailing of the **Journal** to patrons of the Foundation, the availability of the pages of the **Journal** to the Foundation and the publishing in each issue reports of Foundation activities. It was unanimously voted that a sum not to exceed up to $5,000 should be provided to assist in defraying the costs of publication of the **Journal** for the year 1950.

6. The Secretary reported that from 1943 to November 1949, 845 undergraduate scholarships had been awarded by accredited colleges from Foundation funds. 350 scholarships had been awarded to men, of which 76 were renewals; and 495 were awarded to women, of which 149 were renewals. The Secretary further reported that 29 accredited colleges accepted the Foundation offer of up to $400 each for undergraduate scholarships to be matched in an equal amount by the school and to be used by juniors and seniors in the upper quarter of the respective classes. The discussion brought out the fact that the schools were almost equally divided on the desirability of continuing Foundation funds for undergraduate scholarships. The report was received as a matter of information.

7. The Directors engaged in a lengthy discussion on a proposal submitted by Dr. E. C. Elliott that the Foundation provide funds to carry forward achievement tests covering some 2,000 students who took predictive tests under the Pharmaceutical Survey program. The final decision of the Directors in attendance was that funds should be provided to complete this study on the testing of students, both predictive and achievement. It was pointed out that $15,000 had been expended by the Foundation in the conduct of the predictive tests and that unless these achievement tests were applied to the same students, no satisfactory analysis could be made as to whether or not the tests were satisfactory. It was the final unanimous decision of the Directors that funds of the amount of $7,000 should be provided for the conduct, compilation and publication of these achievement tests for pharmacy students who were given the predictive tests in 1946.

8. Dr. Robert L. Swain discussed the work of the American Council on Pharmaceutical Education and its needs for funds to carry on the work of implementation of the Pharmaceutical Survey. He reported fully upon the work which the Council had already done in reinspecting schools and the plans that it intended to carry out during 1950 which provided for quite fully completing all of the reinspecting work. He indicated that work thus far done was resulting in very substantial improvement in the facilities and the functioning of the colleges that had been visited. He recommended strongly that the Foundation again appropriate the sum of $20,000 to enable the Council to carry forward its important work of reinspecting accredited colleges of pharmacy. After discussion of considerable length, the request was approved unanimously.

9. Dr. Swain as Chairman of the Special Committee appointed by President Beardsley on enlarging, expanding and extending Foundation activities presented a preliminary report on this subject. He advised that he had conferred with Dr. Little, as one member of his committee; also with Counsel Hoge, and that his committee was preparing a report which would include a proposed amendment to the By-Laws of the Foundation providing for enlarging the Board of Directors to a number not to exceed twenty-five. This would afford an opportunity for bringing into the Foundation work a larger number of outstanding men in the field of pharmacy, some of whom already had indicated willingness to cooperate. A plan for enlarging the Board of Directors was discussed and the consensus of opinion was that such an increase would be desirable. A complete report of the Special Committee will be submitted at the time of the annual meeting.

10. Announcement was made that the American Foundation for Pharmaceutical Education had been invited by the American Council on Education to make application to become an Institutional Member of that organization. The annual fee of $50 gives voting privileges. After a brief discussion it was unanimously voted to apply for Institutional Membership.

11. The Secretary presented a financial report from Dr. Elliott on the Pharmaceutical Survey covering the period from April 15, 1946 to June 30, 1949, which showed that the grants made in this period totaled $178,965. The report was received as a matter of information.

12. The Secretary presented a communication from Gerald Friedman, Chairman of News Letter Committee, Inter-pharmaceutical Press

Association, requesting the Foundation to consider financial aid to this group. After brief discussion, it was decided that no action should be taken at this time on this subject.

13. Treasurer Penick requested that the Board authorize the Treasurer to make arrangements for the proper auditing of the Foundation books at the year ending April 3, 1950. This action was approved and adjournment occurred at 3:30 P. M.

New Books

Communicable Disease Nursing—by Theresa I. Lynch, A.N., Ed.D., Dean of the School of Nursing, University of Pennsylvania; Formerly Superintendent of Nurses and Director of Instruction, The Willard Parker Hospital, New York City. 1949. Second Edition. 766 pages. 131 text illustrations, 4 plates in color. The C. V. Mosby Company. Price $4.75.

This excellent text covers the whole list of the important communicable diseases. Each disease is discussed from the viewpoint of its history, its prevalence, source of infection, mode of transmission, susceptibility, pathology, laboratory tests, incubation period, the cause of the disease, the period of convalescence, complications and sequelae, treatment of carriers, period of communicable, prognosis and mortality, general treatment, methods of control, nursing care, convalesence, disinfection, and community protection. While, of course, this text is primarily for nurses, this reviewer is of the opinion that the great mass of intelligent laymen should know more about the control of disease and the care of the sick if public health work is to be effective. Such a book as this can contribute greatly to that objective.

Anatomy and Physiology Laboratory Manual, by Verna Vogel, B.S., M.A., Assistant Professor of Nursing Education, University of Georgia, Atlantic Division. Assisted by Jesse D. Perkinson, Jr., B.S., M.S., Ph.D., Assistant Professor of Zoology, University of Georgia, Athens, 1949. 194 pages. Illustrated. The C. V. Mosby Company. Price $2.75.

The authors state the objective of the manual is to assist the student in a better understanding of the human body. The stress is placed upon structure rather than upon function. The physiological aspect is to be got from books rather than from laboratory experimentation and observation. The animal experimentation is confined to a few experiments such as the demonstration of ciliary action, the observation of the circulation, in the web of the frog's foot, and studies on the pulse and blood pressure in the human subject. The manual serves well as a guide to the library study of the subjects presented and the line drawings are clear and accurate.

Oral Histology & Embryology, Edited by Balint Orban, M.D., D.D.S., College of Dentistry, University of Illinois, with the cooperation of sixteen collaborators in their special fields. Second Edition. 1949. 364 pages. 265 text illustrations including 4 colored plates. The C. V. Mosby Company. Price $8.00.

An Editor and sixteen collaborators in any field of professional and scientific endeavor are bound to have divergent points of view. The task of the editor is to coordinate these differences of opinion and, with the aid of the authors, to present a text that will most nearly represent the composite opinion of those who had a part in its creation. This was the basic policy followed in the first edition and adhered to in the second. The Editor makes a statement which all writers of texts might well follow when he says,—"Where factual evidence is still incomplete, a hypothetical explanation or interpretation was given. In both instances, the Editor is aware that future research may necessitate changes." The new edition shows the progress which has been made in the last five years. The mechanics of the book could hardly be improved upon. The quality of the paper, the clearness of the type, and the elegance of the illustrations show we are getting away from the war years.

Each chapter is followed by a list of references which will enable the student, and especially the practitioner, to delve further, if he has the urge, into the secrets of sources which have been used to create the text. The final chapter deals with the methods of preparing material for study which will be most helpful to those practitioners who have an inate desire to look into oral structures and see things for

themselves. Here is another book that should find its way into medical and pharmaceutical libraries.

The Official Preparations of Pharmacy—by Charles Oren Lee, Ph.D., Professor of Pharmacy, Purdue University. 1949. 528 pages, illustrated. The C. V. Mosby Company. Price $5.50.

The author states that the book has been written for the purpose of discussing the problems which pertain to the manufacture of pharmaceutical preparations official in the latest editions of the U.S.P. and the N.F. and presupposes that the student has had a course dealing with pharmaceutical technology or fundamental principles of the sciences basic to an understanding of pharmaceutical processes. The preface calls attention to the manner of presentation of the material and the author does well when he again emphasizes his reason for writing the book when he says, "The primary purpose of this text is to present the problems of pharmacy and chemistry which are involved in the manufacture of the official preparation in a manner helpful to the beginner, whether a student in college or an apprentice in a modern pharmacy." Dr. Lee has made a contribution to better teaching.

Manual of Pharmaceutical Law—by William Pettit, Lecturer in Pharmaceutical Jurisprudence, University of Pittsburgh. 1949. 170 pages, illustrated. The MacMillan Company. Price $2.75.

The text deals with the general problems of how the government and the states regulate pharmacy; the federal laws relating to food, drug, cosmetics, narcotics, false advertising in commerce; the insecticide act and the laws governing the handling of viruses, serums and toxins; the pharmacist's liability for negligence; his liability for the acts of employees; contracts of pharmacists; and other rights, business writs, and business failure. There are two appendixes—one giving the Uniform Narcotic Act and the other the important federal laws—The Food & Drug & Cosmetic Act, The Federal Narcotic Law, The Federal Public Health Service Act, and The Postal Law.

The field of pharmaceutical law is one of the most difficult areas of text book writing because of the ever changing character of federal and state laws and municipal ordinances. The author of this text has done well in stating the basic laws which control the area in which the pharmacist operates.

The Story of Language—by Mario Pei, Associate Professor of Romance Languages, Columbia University. 1949. First Edition. 493 pages. J. B. Lippincott Company. Price $5.00.

If the Story of Language had been written many years ago and if this reviewer had read it, and if the reading of it had led him to realize that language as a means of communication between human beings was the harbinger of civilization, he would have had a deeper interest in the study of the languages and more concern about his own use of the mother tongue. Dr. Pei says all that needs to be said and better than anyone else can say it when he writes, "The story of language is the story of human civilization. Nowhere is civilization so perfectly mirrored as in speech. If our knowledge of speech, or speech itself, is not yet perfected, neither is civilization. Language is forever changing and evolving, as are all human things. Linguistics, the study of the laws governing the evolution of language, becomes socially significant only when it sheds light upon the people who speak languages and their civilization. When this light is properly cast, linguistics ceases to be the dry-as-dust subject that many people have suspected it of being, and becomes the most absorbing of pursuits—absorbing as the story of mankind itself. It is fashionable in certain circles to scoff at language study and to advocate other pursuits, taking language for granted. A moment's reflection will reveal the absurdity of this attitude. In what other pursuits will language and languages not enter as necessary tools of expression and understanding? And if you will scoff at language and languages, how, save in terms of language, will you scoff?"

From the Hills—by John Zahorsky, M.D. 1949. 388 pages. The C. V. Mosby Company. Price $4.00.

An autobiography of a pediatrician. The life story of a man who was born in Mereny, Hungary, who came to this country as a babe in his mother's arms. Thus fate made it impossible for him to aspire to the Presidency. But it did not prevent him through a long and vigorous life from becoming a pediatrician of note and at the same time he clung to the soil and became a part of the eternal hills of the Ozarks in his beloved Missouri. The history of American medicine is the history of those who have lived and practiced it, and Dr. Zahorsky has made a notable contribution to that history, and has made a place for himself along with many another medical man who in these latter days chose to record day by day the events of their living.

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